

STATE OF OHIO
DEPARTMENT OF NATURAL RESOURCES
DIVISION OF MINES & RECLAMATION
* CONDITIONAL ISSUANCE

REVISED

COAL MINING & RECLAMATION PERMIT

Issued to: The Ohio Valley Coal Company Application No. D-0360-7
56854 Pleasant Ridge Road Acreage 2,650.0
Alledonia, Ohio 43902 Effective June 19, 1998
 Telephone (740) 926-1351 Expires June 5, 1999
 AREA CODE

Type of Operation: Surface, X Underground, Other (indicate)

LOCATION OF PERMIT AREA

Names of Landowners	T- <u> </u> , R- <u> </u>	Sec.	Lot	Township	County
N/A No Surface Affectment					

* This permit is conditionally issued base on the following:

A Phase I architectural survey of the historic properties identified on the Attachment 27A for this application is necessary six months prior to them being undermined. The survey will include documentation of the historic properties on the Ohio Historic Inventory forms as well as archival research on each property tp render an opinion as to whether it may be potentially eligible for listing on the National Register of Historical Places. Prior to any surface or historic property affectment or repair further coordination with the Division and the Ohio Historic Preservation Office is necessary.

*088
10-19-99*
~~A plan to monitor a mature forest on the Simpson property will be developed and implemented no less than 6 months prior to undermining the mature forest on this property. A plan to monitor a wetland on the Simpson property will be developed and implemented no less than one year prior to undermining this area of the Simpson property. The monitoring plan will incorporate the recommendations of the Department of Natural Resources Internal Review team dated November 6, 1997.~~

This permit is issued in accordance with and subject to the provisions, conditions, and limitations of Chapter 1513 of the Revised Code and Chapters 1501:13-1, 1501:13-3 through 1501:13-14 of the Administrative Code.

The approved water monitoring plan for this permit is:

Monitor for quality at: see page 26, F (3) of this permit

Monitor for quantity at: see page 26, F (3) of this permit

June 19, 1998

Date
F46

Lisa J. Morris / by B. Sterling
 Chief, Division of Mines & Reclamation

ORIGINAL

11/95

OHIO DEPARTMENT OF NATURAL RESOURCES
DIVISION OF MINES & RECLAMATION

APPROVAL OF UNDERGROUND COAL MINING PERMIT APPLICATION

1. Name of Applicant The Ohio Valley Coal Company
2. Address of Applicant 56854 Pleasant Ridge Road
City Alledonia State Ohio Zip 43902
3. Application Number D-0360-7
4. Number of acres in underground workings 2,650.0
5. Number of surface acres to be affected 0.0
6. The water monitoring plan for this permit shall be:
see page 26, F(3) of this permit

Note: These monitoring requirements are separate from NPDES monitoring requirements.

7. This application is APPROVED since it demonstrates and the Division has found that the criteria in paragraph (E) of rule 1501: 13-5-01 of the Administrative Code have been met.

Date June 19, 1998

Signed

Lisa J. Morrissey

F63

ORIGINAL

TOVCC 21270

11/95

OHIO DEPARTMENT OF NATURAL RESOURCES
DIVISION OF MINES AND RECLAMATION

Written Findings

Applicant: The Ohio Valley Coal Co.

Application No.: D-0360-7

This application has been reviewed by the Division and these findings, as required by 1501: 13-5-01 (E) of the Ohio Administrative Code, are being made.

1. The permit area is not within an area designated as unsuitable for mining pursuant to 1501:13-3-07 of the Ohio Administrative Code. As of this date two areas within the state have been designated as unsuitable: Guernsey County, Valley Township, Section 8 (for all coal mining operations) and Carroll County, Harrison Township, Sections 4 and 5; Center Township, Sections 27 and 33; Washington Township, Sections 28, 29, 30, 34, 35, and 36 (for full coal recovery underground mining operations).
2. The permit area is not within an area under study for designation as unsuitable for mining based on review of the petitions filed with and being processed by the Division.
3. The permit area is not within one hundred feet of a cemetery based on a field review and map review of the application area and Part 1, D(9) of the permit application.
4. The permit area is not within one hundred feet of the outside right-of-way of a public road based on the field review and map review of the application area and Part 1, D(6) of the permit application.
5. The permit area is not within three hundred feet of an occupied dwelling based on the field review and map review of the application area and Part 1, D(7) of the permit application.
6. The proposed mining operation will not adversely affect publicly owned parks or places included on the National Register of Historic Places based on review of the sites listed in the federal register and Part 1, D(5) of the permit application.
7. The permit area is not within three hundred feet of a public building, school, church, community or institutional building, or public park based on a field review and map review of the application area and Part 1, D(8) of the permit application.

8. The permit area does not include any lands within the boundaries of the National Park System, The National Wildlife Refuge System, The National System of Trails, The National Wilderness Preservation System, The Wild and Scenic Rivers System, including study rivers designated under Section 5(a) of the Wild and Scenic Rivers Act (16 U.S.C. 1276 (a)), or study rivers or study river corridors as established in any guidelines pursuant to that act, National Recreation Areas designated by Acts of Congress, or any nature preserve dedicated pursuant to Chapter 1517. of the Revised Code. This finding is based on review of documents prepared by the National Park Service and the Office of Outdoor Recreation, O.D.N.R., and Part 1, D(1) and D(3) of the permit application.
9. The permit area does not include any federal lands within the boundaries of any National Forest.
10. The permit area is not within one thousand feet of the waterlines of any wild, scenic, or recreational river dedicated pursuant to Chapter 1501., Ohio Revised Code. This finding is based upon the field review and Part 1, D(2) of the permit application.
11. The coal mining operations proposed by this application are not likely to jeopardize the continued existence of threatened or endangered species or are not likely to result in the destruction or adverse modification of their critical habitat as determined under the Endangered Species Act of 1973 (16 U.S.C. 1513 et seq.). The Indiana bat is the only species on the federal list that is in the coal mining region of the state, but per Kent Kroonemeyer's (U.S. Fish & Wildlife) 4-29-85 letter the bat is not in Belmont County and there is no critical habitat in Ohio for any of the federally listed species.
12. The private mineral estate has been severed from the private surface estate on the surface properties owned by: see attachment. The following documents were submitted by the applicant to allow for extraction of the coal: deed.
13. The applicant and/or any affiliated company has corrected or is in the process of correcting to the satisfaction of the issuing agencies, all notices of violations and has no unpaid final demand civil penalty assessments. This finding is based on verification of Division issued N.O.V.'s, review of information through the Applicant Violator System, and letters sent to other regulatory agencies. Those letters and documentation of the reviews are included within the permit application file.
14. The applicant is required to submit the acreage fees prior to issuance of the permit. The applicant is not delinquent in payment of the Federal reclamation fee required by Section 402 of Public Law 95-87 based on review of the

Applicant Violator System.

15. The applicant is required to submit the performance bond prior to issuance of the permit. The receipt for payment of bond is part of the permit file.
16. The applicant (and the operator, if applicable) does not control and has not controlled mining operations with a demonstrated pattern of willful violations of Chapter 1513. of the Revised Code and rules adopted thereunder of such nature, duration, and with such resulting irreparable damage to the environment as to indicate an intent not to comply with such provisions. This finding is based on a records search from the Inspection and Enforcement Section on 6-19-98.
17. The chief has made the following specific approvals required by Chapter 1501: 13-01 through 1501: 13-14 of the Ohio Administrative Code: N/A.
18. Coal mining and reclamation operations to be performed under the permit will not be inconsistent with other such operations anticipated to be performed during the same permit term in areas adjacent to the proposed permit area.
19. Based on review of Part 2, Items B, C, D, E, F and Part 3, Items A(7), D(9), E, F, H of the permit application, it is found that the proposed operations have been designed to prevent damage to the hydrologic balance outside the permit area.
20. The probable cumulative hydrologic impact assessment for this application area and adjacent areas on the hydrologic regime and water availability is based on review of the Attachment 14's, analysis of existing ground water file data by the Division of Water, and other hydrological and geological data which is part of this application. The impact assessment is as follows: See attached Chia
21. The applicant has demonstrated and the chief has found that the mining and reclamation plans contained in Parts 2, 3, and 4 of the permit application can be feasibly accomplished.
22. The permit application does not propose to use an existing structure in connection with or to facilitate the proposed coal mining and reclamation operation based on a field review of the site and Part 3, B(1) of the permit application.
23. The permit application does not contain any special categories of mining based on a field review of the site and Part 4 of the permit application.
24. The chief has accounted for the possible effect of the proposed permit on properties listed or eligible for listing

on the National Register of Historic Places. Consideration was given to, but not limited to, the following: (a) imposing permit conditions which protect the historic resource, (b) requiring revision of the proposed operation plan before application approval, or (c) concluding in a written finding that no protection measures are necessary.

25. The Division of Mines and Reclamation has determined that permit application number D-0360-7 submitted on 5-16-97 and revised 1-30-98, 4-1-98, & 5-6-98 is accurate and complete and that it complies with the requirements of Chapter 1513 of the Revised Code and all rules adopted thereunder.

RSS

R. Scott Stille
(application manager)

6-19-98

(date)

Liza J. Morris / by P. Stille
(Chief, Division of Mines and Reclamation)

6-19-98

(date)

C. (9) (b) List below the following information for each surface owner of land within the proposed underground workings.

OWNER NAME	COUNTY	TOWNSHIP	SEC./LOT	T-	R-
R. BARRICKLOW	BELMONT	SMITH	35/36	6N	4W
S. Central Power Co, formerly THE BELMONT ELECTRIC CORP.	BELMONT	SMITH	35	6N	4W
C.A. BLAKE	BELMONT	SMITH	35	6N	4W
C. & C. BLAKE	BELMONT	SMITH	29	6N	4W
J.L. JR. BLAKE	BELMONT	SMITH	35	6N	4W
J.L. & I.D. BLAKE	BELMONT	SMITH	35	6N	4W
BOROUGH COMPANY	BELMONT	SMITH	23	6N	4W
BOROUGH COMPANY, ETAL	BELMONT	SMITH	22	6N	4W
F.N. & T.M. CARNAHAN	BELMONT	SMITH	29	6N	4W
T.A. & M.B. COYNE	BELMONT	SMITH	28/29	6N	4W
T.K. & J.C. COYNE	BELMONT	SMITH	29	6N	4W
R.N. & F.K. DELANEY	BELMONT	SMITH	22	6N	4W
A. FUNKHOUSER	BELMONT	SMITH	22/28	6N	4W
C.E. & I FUNKHOUSER	BELMONT	SMITH	28	6N	4W
C.E. JR. & C. FUNKHOUSER	BELMONT	SMITH	28	6N	4W
F.P. & A. FUNKHOUSER	BELMONT	SMITH	22	6N	4W
R.L. & M.J. GROVER	BELMONT	SMITH	29	6N	4W
F.T. HART	BELMONT	SMITH	28	6N	4W
R.L. HAYES	BELMONT	SMITH	22	6N	4W
F. & W.L. HORVATH	BELMONT	SMITH	29/35	6N	4W
M. L. & E.S. HUGHES	BELMONT	SMITH	30	6N	4W

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<u>EM & I</u>	<u>JOHNSON</u>	<u>BELMONT</u>	<u>SMITH</u>	<u>36</u>	<u>6N</u>	<u>4W</u>
<u>J. & CF</u>	<u>KEMP</u>	<u>BELMONT</u>	<u>SMITH</u>	<u>35</u>	<u>6N</u>	<u>4W</u>
<u>R.E. & B.J.</u>	<u>KEMP</u>	<u>BELMONT</u>	<u>SMITH</u>	<u>35</u>	<u>6N</u>	<u>4W</u>
<u>D.M.</u>	<u>KINDLER</u>	<u>BELMONT</u>	<u>SMITH</u>	<u>23/29</u>	<u>6N</u>	<u>4W</u>
<u>R.M.</u>	<u>MILHOAN</u>	<u>BELMONT</u>	<u>SMITH</u>	<u>35/36</u>	<u>6N</u>	<u>4W</u>
<u>J.S.</u>	<u>MITCHELL</u>	<u>BELMONT</u>	<u>SMITH</u>	<u>29/30</u>	<u>6N</u>	<u>4W</u>
<u>A.T.</u>	<u>NIXON</u>	<u>BELMONT</u>	<u>SMITH</u>	<u>24</u>	<u>6N</u>	<u>4W</u>
<u>C.A. & M.A.</u>	<u>PICKENS</u>	<u>BELMONT</u>	<u>SMITH</u>	<u>29</u>	<u>6N</u>	<u>4W</u>
<u>C. & S.</u>	<u>POWELL</u>	<u>BELMONT</u>	<u>SMITH</u>	<u>35</u>	<u>6N</u>	<u>4W</u>
<u>J.L. JR. & T.A.</u>	<u>REESE</u>	<u>BELMONT</u>	<u>SMITH</u>	<u>24</u>	<u>6N</u>	<u>4W</u>
<u>R.S.</u>	<u>RICE</u>	<u>BELMONT</u>	<u>SMITH</u>	<u>22</u>	<u>6N</u>	<u>4W</u>
<u>T.N. & E.M.</u>	<u>RUBEL</u>	<u>BELMONT</u>	<u>SMITH</u>	<u>28</u>	<u>6N</u>	<u>4W</u>
<u>R & F COAL COMPANY</u>		<u>BELMONT</u>	<u>SMITH</u>	<u>24/30</u>	<u>6N</u>	<u>4W</u>
<u>R. SR. & J.</u>	<u>SAFFELL</u>	<u>BELMONT</u>	<u>SMITH</u>	<u>28</u>	<u>6N</u>	<u>4W</u>
<u>M.E. & T.</u>	<u>SEACREST</u>	<u>BELMONT</u>	<u>SMITH</u>	<u>35</u>	<u>6N</u>	<u>4W</u>
<u>F.</u>	<u>SIMPSON</u>	<u>BELMONT</u>	<u>SMITH</u>	<u>34/35</u>	<u>6N</u>	<u>4W</u>
<u>S. ETAL</u>	<u>SIMPSON</u>	<u>BELMONT</u>	<u>SMITH</u>	<u>34</u>	<u>6N</u>	<u>4W</u>
<u>F. & S.</u>	<u>SIMPSON</u>	<u>BELMONT</u>	<u>SMITH</u>	<u>34/35</u>	<u>6N</u>	<u>4W</u>
<u>O. JR. & B.</u>	<u>SIMPSON</u>	<u>BELMONT</u>	<u>SMITH</u>	<u>36</u>	<u>6N</u>	<u>4W</u>
<u>A.A.</u>	<u>SMITH</u>	<u>BELMONT</u>	<u>SMITH</u>	<u>35</u>	<u>6N</u>	<u>4W</u>
<u>J.D. ETAL</u>	<u>STANFORD</u>	<u>BELMONT</u>	<u>SMITH</u>	<u>35</u>	<u>6N</u>	<u>4W</u>
<u>J.L. & M.L.</u>	<u>THOMAS</u>	<u>BELMONT</u>	<u>SMITH</u>	<u>22</u>	<u>6N</u>	<u>4W</u>
<u>D. ETAL</u>	<u>THORNBURG</u>	<u>BELMONT</u>	<u>SMITH</u>	<u>29/30</u>	<u>6N</u>	<u>4W</u>
<u>THE BOARD OF TOWNSHIP TRUSTEES</u>		<u>BELMONT</u>	<u>SMITH</u>	<u>35</u>	<u>6N</u>	<u>4W</u>
<u>R.W. ETAL</u>	<u>WINLAND</u>	<u>BELMONT</u>	<u>SMITH</u>	<u>29</u>	<u>6N</u>	<u>4W</u>

JAN 30 1998

**Final Draft Cumulative Hydrologic Impact Assessment for
OVCC D-0360-7 Powhatan #6 Deep Mine**

Geologist: George Mychkovsky

Date: April 14, 1998

The proposed full-coal recovery underground mining operation is located beneath 2650 acres in Sections 22, 23, 24, 28, 29, 30, 34, 35, and 36 of Smith Township, Belmont County. The #8 Pittsburgh Coal seam of the lower Monongahela Group of the Pennsylvanian System operation will be longwall-mined beneath nine east-west panels. These panels vary in width from 750 feet to 900 feet, and vary in length from 1.5 miles to 2.5 miles. The #8 Pittsburgh Coal seam is located between the approximate elevations of 765 ft. Msl and 845 ft. Msl. No additional permit area is proposed.

The application area lies within the Unglaciaded Plateau Physiographic Province of Ohio. Surface elevations within the hydrology review area range from approximately 1020 ft. Msl, in the northeast corner of the application area along Hutchison Run, to 1397 ft. Msl, in the east-central portion of the application area at Galloway Knob. As a result maximum relief is 377 feet. Narrow V-shaped valleys and narrow ridges characterize the topography. The vast majority of the proposed application area is located within the McMahon Creek Drainage Basin. Only a small portion of the southwest corner of the application area is located within the Captina Creek Drainage Basin. This portion of the application area drains southward via the intermittent that flows through D37-000, which discharges into Captina Creek via Joy Fork and Bend Fork. In general the northern portion of the application area drains northeastward to McMahon Creek, while the southern portion of the application area drains southeastward to perennial Williams Creek. The latter stream discharges into McMahon Creek approximately 3 1/2 miles to the east of the application area.

Extensive surface mining and deep mining for various coal seams has taken place with this drainage basin, although the proposed application area has not been previously affected by mining. The Y & O Coal Co. Eleanor deep mine (OGS abandoned deep mine Bt-100), which was developed in the #8 Pittsburgh Coal seam at 800 ft. msl and was abandoned in 1928, is located just over 500 feet from the proposed deep mine limits. The proposed mining operation should have no effect on this abandoned deep mine.

Overburden thickness averages approximately, 400 feet and varies from approximately 200 feet in the northeast portion of the application area, along Hutchison Run to approximately 597 feet in east-central portion of the application area beneath Galloway Knob. Strata above the mid-ridge level belong to the Permian Dunkard Group, with the underlying Pennsylvanian Monongahela Group comprising the bedrock at the lower levels. The #8 Coal seam ranges from 4.6 feet to 7.5 feet in thickness, with an average thickness of approximately 5.8 feet thick. Total sulfur content ranges from 4.3% to 6.4%, while pyritic sulfur content ranges from 2.1% to 4.1%. The approximate average total sulfur and pyritic sulfur content values are 5.1% and 2.7%, respectively. The dip of the #8 Coal seam, which is rather uniform, is to the southeast at approximately 40 feet per mile.

The subsurface geology of the application area is very heterogeneous, and except for the major coal seams, very few strata can be correlated across significant distances. Soft rocks, which are comprised of shale, mudstone, claystone, sandy shale, and clay, constitute 46% to 81% of the overburden. The remainder of the overburden is comprised of hard rocks, which includes sandstone, limestone, and siltstone. The abundance of soft rocks, which are typically very fine-grained, is significant, since these rocks tend to have very low permeabilities and are typically aquitards or aquicludes. Furthermore because of the relatively rapid facies changes in the area, these clay-rich rock units tend to limit the vertical and horizontal extents of the saturated water-bearing zones. As a result there are no regional aquifers in the area. Instead several saturated water-bearing zones of rather limited horizontal and vertical extents, addressed in greater detail below, characterize the ground-water system.

The highly discontinuous nature of the strata and their hydrologic characteristics serve to minimize adverse hydrologic impacts caused by longwall mining-induced subsidence. The reason for this is that adverse impacts are more localized due to the limited hydrologic communication across and along stratigraphic units. By the same token, predictability of impact at a specific supply is less certain. Another significant characteristic of these soft rocks is that they tend to heal when fractured; consequently impacts due to subsidence-induced fracturing will be mitigated.

Ground-water resources in the immediate area are meager, with the submitted Analysis of Existing Ground Water File Data, prepared by the Division of Water, indicating yields ranging from one to 15 gallons per minute. The Division of Water's Ground-Water Resources of Belmont County map indicates that yields in the area are typically less than 2 gallons per minute, with an average well depth of 95 feet. A public water line provides water for several residents immediately to the southeast of the application area. The Division of Water's report expressed concern that the proposed operation would affect water wells within the hydrologic limits and recommended monitoring of these wells. This concern is addressed by the monitoring plan proposed by the applicant.

As was previously mentioned, there are no regional aquifers within the hydrology review area. The applicant has identified 4 aquifers of limited areal extent, labeled zones A through D with increasing depth, within the hydrology review area. These aquifers range in elevation from 850 ft. msl to 1390 ft. msl. Most of the water wells are developed in alternating sandstone, shale, limestone, and coal units at depths ranging from 40 feet to 155 feet. Ground-water generally occurs within 100 feet of the land surface, as fractures which transmit ground-water are closed-off at greater depths. Furthermore, according to the Division of Water, ground-water more than 250 feet below valley bottoms is generally brackish. Nine dug water wells are developed in the unconsolidated, weathered bedrock that comprises zone A at depths generally less than 30 feet. Background sampling revealed usually good ground-water quality, although occasionally high total iron and total manganese concentrations were reported. The

ground-water is weakly alkaline, with pH values typically slightly above 7 standard units. Stream and pond water quality is similar to that of ground-water.

The inventory compiled by the applicant includes approximately 60 wells and 28 developed springs within or just beyond the hydrology review area, with the vast majority of sites sampled over six-month periods. Of these supplies, approximately 38 wells and 18 developed springs are legitimately used as domestic and/or livestock supplies. Approximately 22 used wells and 12 used developed springs are located within the application area.

Impacts observed by previous monitoring at D-0360-2 and D-0360-3 of the Powhatan #6 Mine are predicted to occur at the proposed operation. This previous monitoring has shown that the greatest risk is posed to wells developed in the zone of fracturing, in which extensive fracturing takes place that extends upwards from the mined-out zone to a height approximately 30 times the coal seam thickness. Therefore it is conservatively calculated that the zone of fracturing above the deep mine would extend upwards approximately 200 feet ($30 \times 5.8 = 174$). Furthermore wells immediately above the panels and gates are at a greater risk than those located within the adjacent area. This previous monitoring has shown that the vast majority of supplies located over 700 feet from a panel boundary were not impacted. Finally wells located along hillsides and hilltops were more likely to be adversely affected than wells located along valley bottoms.

Within the application area the top of the anticipated fracture zone varies in elevation from 965 ft. msl to 1045 ft. msl. The lower portion of zone D is located within the anticipated zone of fracturing. There are six used wells are partially to totally supplied by zone D, however the bottom of only one well, W-390, is within the anticipated zone of fracturing. Since this well is approximately 900 feet from a panel edge, it is not anticipated that the proposed longwall mining operation will affect this well. Zone D does not supply any used developed springs. Furthermore there are no used wells within 700 feet of a panel edge that have less than 200 feet of overburden between the well bottom and the top of the #8 Coal seam.

Aquifers B and C are located in the intermediate zone of the post-subsidence profile, also called the constrained zone by the applicant. Wells developed in these aquifers may undergo partial dewatering, varying from a short-term to long-term basis. It is also possible that the loss of water in one well may result in a gain for another well. Approximately seventeen used wells that are supplied by the intermediate zone aquifers are located within the application area, while 14 wells supplied by these aquifers are located within the adjacent area. Based on monitoring at D-0360-2 and D-0360-3, it is predicted that the wells within 700 feet of a panel edge will have a 41% chance of minimal impact, 11% chance of moderate impact, and 48% chance of severe impact. The notable exception is the limited impact observed in wells in valley settings; when cover thickness exceeds 200 feet in valley bottom settings, wells have an 78% probability of minimal impact, 11% probability of moderate impact, and 11% probability of severe impact. Severe impact is defined as water level declines or reduced flow rates that persist

for more than six months. Recovery for moderate impact occurs between two months and six months, while for minimal impact recovery occurs within two months.

The third impact zone resulting from longwall mining is the near-surface fracture zone, which extends from the landsurface to depths of about 50 feet. By their very nature, dug wells, shallow drilled wells, and developed springs are located within this zone. Approximately twelve used developed springs and five used wells that are supplied by the near-surface fracture zone aquifers are located within the application area. Four used dug wells and eight used developed springs that are supplied by the near-surface fracture zone aquifers are located within the adjacent area. Based on monitoring data of developed springs collected at D-0360-2 and D-0360-3, it is predicted that developed springs within 700 feet of a panel edge will have a 6% chance of minimal impact, 3% chance of moderate impact, and 91% chance of severe impact. A review of the literature regarding the impacts of subsidence caused by longwall mining indicates that occasionally the loss of flow in one developed spring has been observed to reappear as increased flow at a spring developed at a lower elevation.

The applicant has described a temporary and permanent water replacement plan that will be implemented as necessary. The monitoring plan outlined in the application will help the operator prepare for a timely response to dewatering complaints from affected landowners and to assess the hydrologic impacts resulting from the longwall mining operation. Furthermore this monitoring plan should address the concerns of the Division of Water that were mentioned previously.

Over 60 intermittent streams and their tributaries were inventoried in the application. Monitoring at the Powhatan #6 Mine reveals minimal to no impact on stream dewatering. Nevertheless some dewatering of first-order intermittent streams is possible due to relocation of the springs at the headwaters of these streams to lower elevations.

Thirteen ponds are located within the application area, with five of these ponds used for livestock watering. Four ponds are located within the adjacent area, however none of these ponds are in use. No impact is anticipated to any of the used ponds, which are at least 380 feet above the proposed deep mine. Nevertheless short-term temporary dewatering due to near-surface fracturing is possible, as was discussed previously.

Insofar as the deep mine is at least 200 feet beneath the landsurface, no acid discharge at the surface will occur. With the exception of a possible temporary, small increase in turbidity, longwall mining will not affect the quality of any water supplies in the hydrology review area, as supplying aquifers are at least 100 feet above the level of proposed mining. Monitoring of water supplies to-date at the Powhatan #6 Mine has not revealed any significant quality impacts due to longwall mining. It should be noted that neither coal wastes nor non-coal wastes will be disposed within the proposed application area.

Shale, claystone, and limestone underlie the #8 Coal seam. These underlying strata will not be disturbed by the proposed operation. Consequently they will remain intact following mining as lower confining strata upon which a saturated water-bearing zone may develop in the rubble zone. Furthermore these underlying units will serve as a barrier to downward percolation of ground-water from the deep mine, thereby protecting any lower saturated zones from contamination originating in the deep mine. It should be noted that no used water supplies are developed in aquifers in or below the #8 Coal seam, and it is possible these aquifers are brackish. In summary, the proposed longwall mining operation will not result in material damage to the hydrologic balance.

OHIO DEPARTMENT OF NATURAL RESOURCES
DIVISION OF RECLAMATION

UNDERGROUND COAL MINING AND RECLAMATION PERMIT APPLICATION

Applicant The Ohio Valley Coal Company

A. Type of Operation (check appropriate space(s)):

_____ Shaft, _____ Slope, _____ Drift,
X _____ Room and Pillar, _____ Pillar Extraction,
X _____ Longwall, _____ Combined Surface and Underground

B. Type of Application (check appropriate space(s)):

(1) _____ New
(2) _____ Initial Underground Workings to Existing Permit
(3) x Additional Underground Workings

C. Address the following if applicable:

(1)	Permit Number	D-0360
(2)	Date Issued	6/20/84

D. Did a person other than an employee of the applicant prepare this application? _____ Yes, ^X No. If "yes," provide:

Preparer's Name _____

Address _____

City _____ State _____ Zip _____

Telephone - -

E. I, the undersigned, a responsible official of the applicant, do hereby verify the information in the complete permit application as true and correct to the best of my information and belief.

Printed Name Robert E. Murray ; Title President and Chief Executive Officer

Signature Robert E. Mervin; Date May 2, 1997

Sworn before me and subscribed in my presence this

2ND day of MAY, 1997.

Charles L. Lusk
Notary Public



CLAUDE L. LUKE
Notary Public, State of Ohio
My Commission Expires August 21, 2001
Recorded in Belmont County

ORIGINAL

D0360-7



Robert E. Murray
President & Chief Executive Officer

January 27, 1997

Ms. Lisa Morris, Chief
Division of Mines and Reclamation
Ohio Department of Natural Resources
1855 Fountain Square Court
Columbus, Ohio 43224

Dear Ms. Morris:

This letter is to certify that

David L. Bartsch, P.E.

is authorized to sign application revisions for The Ohio Valley Coal Company. Permit D-0360 will be the subject of applications to add underground mining areas. In his job as the Environmental Coordinator and Permit Administrator, Mr. Bartsch acts as a responsible official of this company. If you have any questions, please contact me.

Sincerely,
THE OHIO VALLEY COAL COMPANY

Robert E. Murray
President and
Chief Executive Officer

ORIGINAL

56854 PLEASANT RIDGE ROAD • ALLEDONIA OHIO 43902
(614) 926-1351 • FAX (614) 926-1615

D0360-7

TOVCC 21283

F. For Review on Review Only. This item is to be completed after revisions, if any, have been made to the permit application.

I, the undersigned, a responsible official of the applicant, do hereby verify and acknowledge the revisions made during the permit review process as true and correct to the best of my information and belief.

Printed Name David L. Bartsch; Title Permit Administrator

Signature David L. Bartsch; Date January 29, 1998

Sworn before me and subscribed in my presence this

29th day of January, 19 98.

DEBORAH E. ABREGG, Notary Public
For The State of Ohio
My Commission Expires August 11, 1998
Recorded in Monroe County

Deborah E. Abregg
Notary Public

PART 1. LEGAL, FINANCIAL, COMPLIANCE, AND RELATED INFORMATION

A. IDENTIFICATION OF INTERESTS

(1) Applicant's Name The Ohio Valley Coal Company

Address 56854 Pleasant Ridge Road

City Alledonia State Ohio Zip 43902

Telephone 614 - 926 - 1351

Employer Identification No. (EIN) _____, or

Social Security No. (SSN), _____

(2) Indicate business structure of applicant and additional information:

_____ Single proprietorship,
_____ Partnership (registration no. and date obtained)

X Corporation (charter no. and date incorporated)
5/25/88 384971

_____ Association, _____ Other, specify _____

(3) If the applicant is a single proprietorship, provide the following:

Owner's Name _____

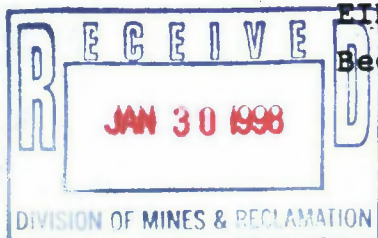
Address _____

City _____ State _____ Zip _____

Telephone _____ - _____ - _____

EIN _____, or SSN _____

Beginning date of ownership _____



DO-360-7
ORIGINAL

F. For Review on Review Only. This item is to be completed after revisions, if any, have been made to the permit application.

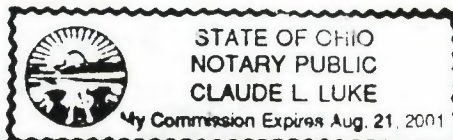
I, the undersigned, a responsible official of the applicant, do hereby verify and acknowledge the revisions made during the permit review process as true and correct to the best of my information and belief.

Printed Name David L. Bartsch; Title Permit Administrator

Signature David L. Bartsch; Date 3-20-98

Sworn before me and subscribed in my presence this

20th day of MARCH, 1998.



Claude L. Luke
Notary Public

PART 1. LEGAL, FINANCIAL, COMPLIANCE, AND RELATED INFORMATION

A. IDENTIFICATION OF INTERESTS

(1) Applicant's Name The Ohio Valley Coal Company

Address 56854 Pleasant Ridge Road

City Alliedonia State Ohio Zip 43902

Telephone 614 - 926 - 1351

Employer Identification No. (EIN) _____, or

Social Security No. (SSN), _____

(2) Indicate business structure of applicant and additional information:

_____ Single proprietorship,
_____ Partnership (registration no. and date obtained)

X _____ Corporation (charter no. and date incorporated)
5/25/88 384971

_____ Association, _____ Other, specify _____

(3) If the applicant is a single proprietorship, provide the following:

Owner's Name _____

Address _____

City _____ State _____ Zip _____

Telephone _____ - _____ - _____

EIN _____, or SSN _____

Beginning date of ownership _____

ORIGINAL

D0360-7

APR 01 1998

- (4) If the applicant is a business entity other than a single proprietorship, provide the following for the applicant's statutory agent and submit Attachment 1.

Agent's Name A & H Statutory
Address 1100 Huntington Building
City Cleveland State Ohio Zip 44115
Telephone 216 - 696 - 1100
EIN _____, or SSN (optional) _____

- (5) Is the operator of the mine to be a person different from the applicant? _____ Yes, X No. If "yes," provide the operator's name and submit Attachment 17. (Note: if more than one operator, indicate operator's name and submit a separate attachment for each.)

Operator's Name _____

- (6) Provide the following for the person who will pay the abandoned mine land reclamation fee for the applicant.

Name The Ohio Valley Coal Company
Address 56854 Pleasant Ridge Road
City Alliedonia State Ohio Zip 43902
Telephone 614 - 926 - 1351
EIN _____, or SSN (optional) _____

- (7) Provide the following for all persons having the authority or ability to commit the financial, real property assets, or working resources of the applicant who are not otherwise identified as officers, directors, or owners of the applicant. If none, check box: []. If any person listed is a business entity and not an individual, also complete Attachment 1 for that person.

Name Robert E. Murray
Address 29525 Chagrin Boulevard, Suite 111
City Pepper Pike State Ohio Zip 44122
Telephone 216 - 765 - 1240
EIN _____, or SSN _____

Date O & C relationship began/ended (if applicable)

5/25/88 /

Submit and identify additional pages necessary to complete response.

See Attachment 1's

D0360-7

ORIGINAL

JAN 30 1998

TOVCC 21286

- (8) Provide the following for all persons owning or controlling the coal to be mined by another person under a lease, sublease, or other contract and (a) having the right to receive the coal after mining, or (b) having the authority to determine the manner in which another person conducts coal mining operations. If none, check box: [☒]. If any person listed is a business entity and not an individual, also complete Attachment 1 for that person.

Name _____

Address _____

City _____ State _____ Zip _____

Telephone _____ - _____ - _____

EIN _____, or SSN _____

O & C relationship to entity _____

Date O & C relationship began/ended (if applicable) _____

Submit and identify additional pages necessary to complete response.

- (9) List below the person or persons primarily responsible for ensuring that the applicant will comply with Chapter 1513. of the Revised Code and the rules adopted pursuant thereto while mining and reclaiming the area for which this permit is requested.

Robert E. Murray

- (10) Has the applicant, any person listed under items A(3), (7), and (8), or any person listed on Attachment 1 who "owned or controlled" or "owns or controls" as defined in 1501:13-4-03(A), held a coal mining permit in the United States within the five years preceding the date of the application? ☒ Yes, _____ No. If "yes," submit Attachment 5. See Attachment 5's
- (11) Does the applicant, any person listed under items A(3), (7), and (8), or any person listed on Attachment 1 have a pending coal mining application in any state of the United States? ☒ Yes, _____ No. If "yes," submit Attachment 23. See Attachment 23's
- (12) Indicate name of mine Powhatan No. 6 Mine
- (13) List below the MSHA identification numbers for the mine and for all mine-associated structures requiring MSHA approval on the proposed permit area.
33-01159
1210-OH8-0025-003
1210-OH8-0025-004
1210-OH8-0025-005
- (14) Submit Attachment 22, Certificate of Liability Insurance. See Attachment 22

ORIGINAL

JAN 30 1998

D0360-7

B. COMPLIANCE INFORMATION

- (1) Has the applicant, any subsidiary, affiliate, or persons controlled by or under common control with the applicant:
- (a) Had a federal or state coal mining permit suspended or revoked in the five years preceding the date of submission of this application?
_____ Yes, X No. If "yes," submit Attachment 6.
- (b) Forfeited a mining bond or similar security deposited in lieu of bond? _____ Yes, X No.
If "yes," submit Attachment 6.
- (2) Has the applicant been issued a notice of violation (NOV) in connection with any coal mining and reclamation operation during the three years preceding the date of submission of this application for violations of Chapter 1513. of the Revised Code or these rules, or of any federal or state law, rule, or regulation pertaining to air or water environmental protection? X Yes, _____ No. If "yes," submit Attachment 7A.
- (3) Have any unabated federal or state cessation orders (COs) and unabated air and water quality notices of violations (NOVs) been received prior to the submission date of this application by any coal mining and reclamation operation owned or controlled by either the applicant or by any person who owns or controls the applicant? _____ Yes, X No. If "yes," submit Attachment 7B.

ORIGINAL

D0360-7

C. RIGHT OF ENTRY INFORMATION

- (1) (a) Provide the following information for every legal or equitable owner of record, surface and mineral, of the property to be mined on the permit area (i.e. areas affected by surface operations and facilities), indicating whether the ownership is of surface, coal, or noncoal mineral.

N/A - No Permit Area

Name _____

Address _____

City _____ State _____ Zip _____

Surface _____, Coal _____, Noncoal _____

Deed Parcel No. _____

Name _____

Address _____

City _____ State _____ Zip _____

Surface _____, Coal _____, Noncoal _____

Deed Parcel No. _____

Name _____

Address _____

City _____ State _____ Zip _____

Surface _____, Coal _____, Noncoal _____

Deed Parcel No. _____

Name _____

Address _____

City _____ State _____ Zip _____

Surface _____, Coal _____, Noncoal _____

Deed Parcel No. _____

ORIGINAL

00360-7

C.(1)(b) Provide the following information for every legal or equitable owner of the property to be mined covered by the underground workings indicating whether ownership is for the surface or coal.

Name ROBERT L. BARRICKLOW
Address 98 BORDER LANE
City ST. CLAIRSVILLE State OHIO Zip 43950
Surface X, Coal _____
Deed Parcel No. 1-27-1

Name THE BELMONT ELECTRIC CORP., INC.
c/o SOUTH CENTRAL POWER COMPANY - BELMONT DIV.
Address P.O. BOX 270
City BARNESVILLE State OHIO Zip 43713
Surface X, Coal _____
Deed Parcel No. 1-27-1

Name CHAD A. BLAKE
Address 63643 CHAPEL HILL ROAD
City BELMONT State OHIO Zip 43718
Surface X, Coal _____
Deed Parcel No. 1-22-23

Name CHAD & CARMEN BLAKE
Address 45655 LUCAS-LASH ROAD
City BELMONT State OHIO Zip 43718
Surface X, Coal _____
Deed Parcel No. 1-22-12, 1-22-14

ORIGINAL

D0360-7

Name JACK LEE BLAKE JR.
Address 63645 CHAPEL HILL ROAD
City BELMONT State OHIO Zip 43718
Surface X, Coal _____
Deed Parcel No. 1-22-23

Name JACK L. & IRIS D. BLAKE
Address 63641 CHAPEL HILL ROAD
City BELMONT State OHIO Zip 43718
Surface X, Coal _____
Deed Parcel No. 1-22-23

Name BOROUGH COMPANY
Address 4470 INDIANOLA AVENUE
City COLUMBUS State OHIO Zip 43214
Surface X, Coal _____
Deed Parcel No. T-1, 1-22-9, T-2

Name BOROUGH COMPANY, ETAL
Address 4470 INDIANOLA AVENUE
City COLUMBUS State OHIO Zip 43214
Surface X, Coal _____
Deed Parcel No. T-3

Name FRANK & TERESA CARNAHAN
Address 71548 SUNNY ACRES DRIVE
City MARTINS FERRY State OHIO Zip 43935
Surface X, Coal _____
Deed Parcel No. 1-22-13

ORIGINAL

D0360-7

Name TERANCE & MARGARET COYNE
Address 45282 LUCAS-LASH ROAD
City BELMONT State OHIO Zip 43718
Surface X, Coal _____
Deed Parcel No. 1-22-17, 1-22-20, 108, 1-22-13

Name THOMAS K. & JOAN C. COYNE
Address 45000 LUCAS-LASH ROAD
City BELMONT State OHIO Zip 43718
Surface X, Coal _____
Deed Parcel No. 1-22-17

Name RALPH N. & FRANCES K. DELANEY
Address 46025 BELMONT-CENTERVILLE ROAD
City BELMONT State OHIO Zip 43718
Surface X, Coal _____
Deed Parcel No. 78

Name ANNA FUNKHOUSER
Address 45839 HART ROAD
City BELMONT State OHIO Zip 43718
Surface X, Coal _____
Deed Parcel No. 104

Name FRANK P. AND ANNA FUNKHOUSER
Address 45839 HART ROAD
City BELMONT State OHIO Zip 43718
Surface X, Coal _____
Deed Parcel No. 77-1, 77-2

D0360-7

ORIGINAL

JAN 30 1998

Name CARL E. JR. & CYNTHIA FUNKHOUSER
Address 45843 HART ROAD
City BELMONT State OHIO Zip 43718
Surface X, Coal _____
Deed Parcel No. 104

Name CARL E. & INGRID FUNKHOUSER
Address 45881 HART ROAD
City BELMONT State OHIO Zip 43718
Surface X, Coal _____
Deed Parcel No. 104

Name ROY L. & MARY J. GROVER
Address 45332 LUCAS-LASH ROAD
City BELMONT State OHIO Zip 43718
Surface X, Coal _____
Deed Parcel No. 1-22-17

Name FRANCES T. HART
Address 45239 HART ROAD
City BELMONT State OHIO Zip 43718
Surface X, Coal _____
Deed Parcel No. 103, 106, 107, 109

Name RANDALL L. HAYES
Address 62920 CENTERVILLE-WARNOCK ROAD
City BELMONT State OHIO Zip 43718
Surface X, Coal _____
Deed Parcel No. 78

0360-7
ORIGINAL

Name FRANK & WANDA HORVATH
Address 1070 EDWARD AVENUE SW
City MASSILLON State OHIO Zip 44647
Surface X, Coal _____
Deed Parcel No. 1-22-23

Name MARION L. & EDNA S. HUGHES
Address 117 HAYDEN AVENUE
City COLUMBUS State OHIO Zip 43222
Surface X, Coal _____
Deed Parcel No. 1-22-29

Name CARL JOHNSON
Address ROUTE #2, CHAPEL HILL ROAD
City BELMONT State OHIO Zip 43718
Surface X, Coal _____
Deed Parcel No. 1-28-1

Name J & CF KEMP
Address BISHOP ROAD
City BELMONT State OHIO Zip 43718
Surface X, Coal _____
Deed Parcel No. 1-22-59

Name ROBERT & BETTY KEMP
Address 43830 BELMONT-CENTERVILLE ROAD
City BELMONT State OHIO Zip 43718
Surface X, Coal _____
Deed Parcel No. 1-22-59

ORIGINAL JAN 30 1954
D0360-7

Name DOUGLAS KINDLER - c/o DORSEY B. KINDLER SR.
Address 45810 LUCAS-LASH ROAD
City BELMONT State OHIO Zip 43718
Surface X, Coal _____
Deed Parcel No. 1-22-21, 1-22-15, 1-22-12, 1-22-11,
1-22-7, 1-22-8, 1-22-10, 1-22-14

Name W & B MILHOAN
Address 44310 WATERTOWER ROAD
City BELMONT State OHIO Zip 43718
Surface X, Coal _____
Deed Parcel No. 1-27-1, 1-22-62

Name JOHN MITCHELL
Address 1626 DONNE ROAD
City COLUMBUS State OHIO Zip 43221
Surface X, Coal _____
Deed Parcel No. 1-22-30

Name ANNE T. NIXON
Address 601 SUMATRA AVENUE
City AKRON State OHIO Zip 44305
Surface X, Coal _____
Deed Parcel No. 1-19-34

Name CHARLES & MARY ANN PICKENS
Address 45458 LUCAS-LASH ROAD
City BELMONT State OHIO Zip 43718
Surface X, Coal _____
Deed Parcel No. 1-22-16

ORIGINAL

JAN 30 1998

D0360-7

Name CARLOS & SUSAN POWELL
Address 63454 BISHOP ROAD
City BELMONT State OHIO Zip 43718
Surface X, Coal _____
Deed Parcel No. 1-22-59

Name J & T Reese
Address 9014 OUTLOOK DRIVE
City BROOKLYN State OHIO Zip 44144
Surface X, Coal _____
Deed Parcel No. 1-19-29

Name RICHARD S. RICE
Address 62800 CENTERVILLE-WARNOCK ROAD
City BELMONT State OHIO Zip 43718
Surface X, Coal _____
Deed Parcel No. 76

Name THOMAS N. & ELDA M. RUBEL
Address ROUTE #2, CENTERVILLE-BELMONT ROAD
City BELMONT State OHIO Zip 43718
Surface X, Coal _____
Deed Parcel No. 103

Name R & F COAL COMPANY
Address 232 SOUTH MAIN STREET
City CADIZ State OHIO Zip 43907
Surface X, Coal _____
Deed Parcel No. C-1, 1-22-21, 1-22-22, 1-22-24,
1-19-58, 1-19-82

JAN 30 1998
D0360-7
ORIGINAL

Name ROBERT SR. & JANIE SAFFELL
Address 45438 HART ROAD
City BELMONT State OHIO Zip 43718
Surface X, Coal _____
Deed Parcel No. 105, 106

Name MARK & TINA SEACREST
Address 63511 CHAPEL HILL ROAD
City BELMONT State OHIO Zip 43718
Surface X, Coal _____
Deed Parcel No. 1-22-60

Name FLOYD SIMPSON
Address 44680 BELMONT-CENTERVILLE ROAD
City BELMONT State OHIO Zip 43718
Surface X, Coal _____
Deed Parcel No. 1-24-4, 1-24-1, 1-24-2, 1-24-3,

Name SHIRLEY SIMPSON, ETAL
Address 44377 BELMONT-CENTERVILLE ROAD
City BELMONT State OHIO Zip 43718
Surface X, Coal _____
Deed Parcel No. 1-24-1, 1-24-2, 1-24-3

Name F. & S. SIMPSON
Address 44680 BELMONT-CENTERVILLE ROAD
City BELMONT State OHIO Zip 43718
Surface X, Coal _____
Deed Parcel No. 1-22-59, 1-18-94, 1-22-53, 1-22-52

ORIGINAL

D0360-7

Name ORVILLE E. JR. & BETTY SIMPSON
Address 65343 PLAINFIELD ROAD
City BELMONT State OHIO Zip 43718
Surface X, Coal _____
Deed Parcel No. 1-27-1

Name ALENE A. SMITH
Address P.O. BOX 160
City BELMONT State OHIO Zip 43718
Surface X, Coal _____
Deed Parcel No. 1-22-57

Name JOHN D. STANFORD, ETAL-c/o HELEN V. STANFORD
Address 63850 CHAPEL HILL ROAD
City BELMONT State OHIO Zip 43718
Surface X, Coal _____
Deed Parcel No. 1-22-57

Name JEFFERY L. & MARY L. THOMAS
Address 62938 CENTERVILLE-WARNOCK ROAD
City BELMONT State OHIO Zip 43718
Surface X, Coal _____
Deed Parcel No. 78

Name DOROTHY THORNBURG, ETAL
Address 211 EAST MAIN STREET
City ST. CLAIRSVILLE State OHIO Zip 43950
Surface X, Coal _____
Deed Parcel No. 1-22-22

ORIGINAL
D0360-7

Name THE BOARD OF TOWNSHIP TRUSTEES
c/o LARRY A. OGILBEE
Address 59643 OGILBEE ROAD
City JACOBSBURG State OHIO Zip 43933
Surface X, Coal _____
Deed Parcel No. 1-22-60, 1-18-94, 1-22-23

Name ROBERT WINLAND, ETAL
Address P.O. BOX 111
City SHARON CENTER State OHIO Zip 44274
Surface X, Coal _____
Deed Parcel No. 1-22-18, 1-22-19,

D0360-7

JAN 30 1998

ORIGINAL

TOVCC 21300

- C. (2) Provide the following information for the holders of record of any leasehold interest in the coal to be mined or property to be affected by surface operations or facilities, indicating whether the held interest is of surface, coal, or noncoal rights.

Name The Ohio Valley Coal Company

Address 56854 Pleasant Ridge Road

City Allledonia State Ohio Zip 43902

Surface X, Coal X, Noncoal _____

Name SEE ADDENDUM TO PAGES, C(2)

Address _____

City _____ State _____ Zip _____

Surface _____, Coal _____, Noncoal _____

Submit and identify additional pages necessary to complete response.

- (3) Are there purchasers of record under a real estate contract of the coal to be mined or property to be affected by surface operations and facilities?
_____ Yes, X No. If "yes," submit Attachment 2.
- (4) Is any owner, holder, or purchaser listed in items C(1) (a and b), (2), or (3) respectively, a business entity other than a single proprietorship?
X Yes, _____ No. If "yes," submit Attachment 3.
See Attachment 3
- (5) Is any part of the proposed permit area adjacent to any lands which are not owned by those persons identified in item C(1)(a)? _____ Yes, _____ No. If "yes," submit Attachment 4. N/A No Permit Area
- (6) Does the applicant hold lands, interests in lands, options, or pending bids on interests for lands which are contiguous to the property to be mined?
X Yes, _____ No. If "yes," provide a description of the lands. See Map - Future Application Areas
- (7) Is it anticipated that individual mining permits will be sought for any of those lands described in item C(6) above? _____ Yes, X No. If "yes," submit as an addendum and identify those lands to include the size, sequence, and timing of future mining permits, utilizing a map pursuant to 1501:13-4-13(J)(29), Ohio Administrative Code.

ORIGINAL 360-7

JAN 30 1998

TOVCC 21301

- C. (8)(a) Provide either of the following to allow for coal mining operations on the permit area:
N/A - No Permit Area
(i) A copy of the documents, or
(ii) An affidavit wherein the documents are described.

AFFIDAVIT

State of Ohio, _____ County, ss. _____ being first duly sworn, says that the following described documents convey to the applicant the legal right explained below and is a subject of litigation as shown below.

Type of document _____

Execution Date _____

Expiration Date _____

Parties: From _____ To _____

Description of land: No. Acres _____

County _____ Township _____

Sections _____ Lots _____

Parcel # _____

Explanation of legal rights claimed _____

Pending litigation _____ Yes, _____ No.

Signature of Affiant Date

Position

Sworn before me and subscribed in my presence this

_____ day of _____, 19____.

Notary Public

D0360-7

ORIGINAL

RIGHT OF ENTRY INFORMATION

C.(8)(B) Provide either of the following to allow for coal mining operations on the **underground workings.**

- (i) A copy of the documents, or
- (ii) An affidavit wherein the documents are described. For all documents or affidavits provided for the shadow area, the specific parcels are to be identified on the application map.

AFFIDAVIT

State of Ohio, Belmont County, ss. David L. Bartsch being first duly sworn, says that the following described documents convey to the applicant the legal right explained below and is a subject of litigation as shown below.

Type of Document LEASE

Execution Date 10/23/97

Expiration Date 10/23/2007

Parties: From CONSOL. COAL CO to OVCC

Description of land: PORTIONS OF SMITH TWP, BELMONT CO, SEC. 24

County Belmont Township Smith

Sections 24 Lots

Parcel # C-1

Explanation of legal rights claimed See Addendum to Page 10, Part 1, C(8)(b)

Pending litigation yes X no.

David L. Bartsch

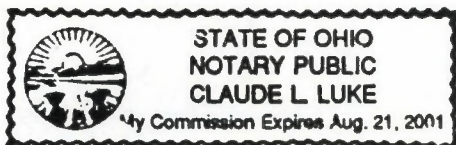
Signature of Affiant

01/29/98

Date

Environmental Coordinator and Permit Administrator
Position

Sworn before me and subscribed in my presence this 29th day of JAN., 19 98.



Claude L. Luke
Notary Public

ORIGINAL

D0360-7

APR 01 1998

TOVCC 21303

RIGHT OF ENTRY INFORMATION

C.(8)(B) Provide either of the following to allow for coal mining operations on the **underground workings.**

- (i) A copy of the documents, or
- (ii) An affidavit wherein the documents are described. For all documents or affidavits provided for the shadow area, the specific parcels are to be identified on the application map.

AFFIDAVIT

State of Ohio, Belmont County, ss. David L. Bartsch being first duly sworn, says that the following described documents convey to the applicant the legal right explained below and is a subject of litigation as shown below.

Type of Document SUBLEASE

Execution Date 04/27/94

Expiration Date N/A

Parties: From CONSOL. LAND CO. to OYCC

Description of land: PORTIONS OF THE FOLLOWING SECTIONS

County Belmont Township Smith

Sections 22,23,24,28,29,30,34,35,36 Lots

Parcel # SEE DEED PARCEL MAP

Explanation of legal rights claimed See Addendum to Page 10, Part I, C(8)(b)

Pending litigation yes X no.

David L. Bartsch

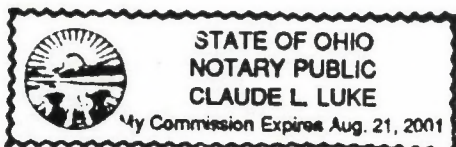
Signature of Affiant

01/29/98

Date

Environmental Coordinator and Permit Administrator
Position

Sworn before me and subscribed in my presence this 29th day of JAN., 1998.



Claude L. Luke
Notary Public

ORIGINAL 00360-7

APR 01 1998

TOVCC 21304

RIGHT OF ENTRY INFORMATION

C.(8)(B) Provide either of the following to allow for coal mining operations on the underground workings.

- (i) A copy of the documents, or
- (ii) An affidavit wherein the documents are described. For all documents or affidavits provided for the shadow area, the specific parcels are to be identified on the application map.

AFFIDAVIT

State of Ohio, Belmont County, ss. David L. Bartsch being first duly sworn, says that the following described documents convey to the applicant the legal right explained below and is a subject of litigation as shown below.

Type of Document LIMITED WARRANTY DEED

Execution Date 05/01/97

Expiration Date NONE

Parties: From CONSOL. LAND CO. to OVCC

Description of land: No. Acres _____

County Belmont

Township Smith

Sections 35

Lots _____

Parcel # 1-18-94

Explanation of legal rights claimed See Addendum to Page 1a, Part 1, C(8)(b),

Item 1

Pending litigation _____ yes X no.

David L. Bartsch

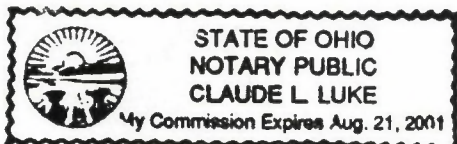
01/27/98

Signature of Affiant

Date

Environmental Coordinator and Permit Administrator
Position

Sworn before me and subscribed in my presence this 27 day of JAN., 19 98.



Claude L. Luke
Notary Public

ORIGINAL

D0360-7

APR 01 1998

TOVCC 21305

RIGHT OF ENTRY INFORMATION

C.(8)(B) Provide either of the following to allow for coal mining operations on the underground workings.

- (i) A copy of the documents, or
- (ii) An affidavit wherein the documents are described. For all documents or affidavits provided for the shadow area, the specific parcels are to be identified on the application map.

AFFIDAVIT

State of Ohio, Belmont County, ss. David L. Bartsch being first duly sworn, says that the following described documents convey to the applicant the legal right explained below and is a subject of litigation as shown below.

Type of Document LIMITED WARRANTY DEED

Execution Date 05/01/97

Expiration Date NONE

Parties: From CONSOL. LAND CO. to OVCC

Description of land: No. Acres _____

County Belmont

Township Smith

Sections 24

Lots _____

Parcel # 1-19-34

Explanation of legal rights claimed See Addendum to Page 10, Part 1, C(8)(b),

Item 2

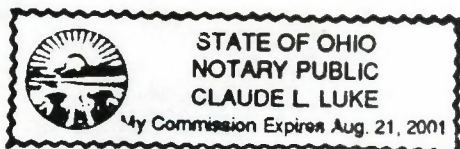
Pending litigation _____ yes X no.

David L. Bartsch
Signature of Affiant

01/27/98
Date

Environmental Coordinator and Permit Administrator
Position

Sworn before me and subscribed in my presence this 27 day of JAN., 19 98.



Claude L. Luke
Notary Public

APR 01 1998

D0360-7
ORIGINAL

TOVCC 21306

RIGHT OF ENTRY INFORMATION

C.(8)(B) Provide either of the following to allow for coal mining operations on the underground workings.

- (i) A copy of the documents, or
- (ii) An affidavit wherein the documents are described. For all documents or affidavits provided for the shadow area, the specific parcels are to be identified on the application map.

AFFIDAVIT

State of Ohio, Belmont County, ss. David L. Bartsch being first duly sworn, says that the following described documents convey to the applicant the legal right explained below and is a subject of litigation as shown below.

Type of Document LIMITED WARRANTY DEED

Execution Date 05/01/97

Expiration Date NONE

Parties: From CONSOL. LAND CO. to OVCC

Description of land: No. Acres _____

County Belmont

Township Smith

Sections 24

Lots _____

Parcel # 1-19-58

Explanation of legal rights claimed See Addendum to Page 10, Part 1, C(8)(b),

Item 3

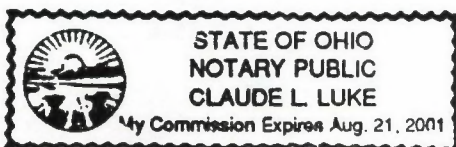
Pending litigation _____ yes X no.

David L. Bartsch
Signature of Affiant

01/27/98
Date

Environmental Coordinator and Permit Administrator
Position

Sworn before me and subscribed in my presence this 27 day of JAN., 19 98.



Claude L. Luke
Notary Public

ORIGINAL

APR 01 1998

D0360-7

RIGHT OF ENTRY INFORMATION

C.(8)(B) Provide either of the following to allow for coal mining operations on the underground workings.

- (i) A copy of the documents, or
- (ii) An affidavit wherein the documents are described. For all documents or affidavits provided for the shadow area, the specific parcels are to be identified on the application map.

AFFIDAVIT

State of Ohio, Belmont County, ss. David L. Bartsch being first duly sworn, says that the following described documents convey to the applicant the legal right explained below and is a subject of litigation as shown below.

Type of Document LIMITED WARRANTY DEED

Execution Date 05/01/97

Expiration Date NONE

Parties: From CONSOL. LAND CO. to OVCC

Description of land: No. Acres _____

County Belmont

Township Smith

Sections 23

Lots _____

Parcel # 1-22-7

Explanation of legal rights claimed See Addendum to Page 10, Part 1, C(8)(b),

Item 4

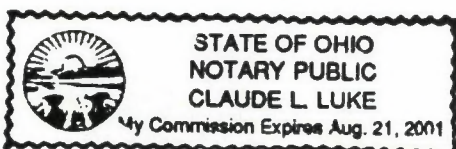
Pending litigation _____ yes X no.

David L. Bartsch
Signature of Affiant

01/27/98
Date

Environmental Coordinator and Permit Administrator
Position

Sworn before me and subscribed in my presence this 27 day of JAN, 19 98.



Claude L. Luke
Notary Public

ORIGINAL

D0360-7

APR 01 1998

TOVCC 21308

RIGHT OF ENTRY INFORMATION

C.(8)(B) Provide either of the following to allow for coal mining operations on the **underground workings.**

- (i) A copy of the documents, or
- (ii) An affidavit wherein the documents are described. For all documents or affidavits provided for the shadow area, the specific parcels are to be identified on the application map.

AFFIDAVIT

State of Ohio, Belmont County, ss. David L. Bartsch being first duly sworn, says that the following described documents convey to the applicant the legal right explained below and is a subject of litigation as shown below.

Type of Document

LIMITED WARRANTY DEEDExecution Date 05/01/97Expiration Date NONEParties: From CONSOL. LAND CO. to OVCC

Description of land: No. Acres _____

County BelmontTownship SmithSections 23

Lots _____

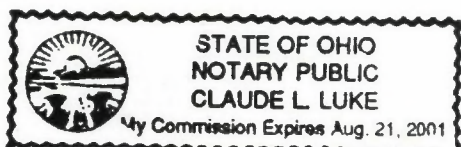
Parcel # 1-22-8Explanation of legal rights claimed See Addendum to Page 14, Part 1, C(8)(b),Item 5Pending litigation _____ yes X no.

David L. Bartsch
Signature of Affiant

01/27/98
Date

Environmental Coordinator and Permit Administrator
Position

Sworn before me and subscribed in my presence this 27 day of JAN., 1998.



Claude L. Luke
Notary Public

ORIGINAL

APR 01 1998

D0360-7

TOVCC 21309

RIGHT OF ENTRY INFORMATION

C.(8)(B) Provide either of the following to allow for coal mining operations on the underground workings.

- (i) A copy of the documents, or
- (ii) An affidavit wherein the documents are described. For all documents or affidavits provided for the shadow area, the specific parcels are to be identified on the application map.

AFFIDAVIT

State of Ohio, Belmont County, ss. David L. Bartsch being first duly sworn, says that the following described documents convey to the applicant the legal right explained below and is a subject of litigation as shown below.

Type of Document

LIMITED WARRANTY DEEDExecution Date 05/01/97Expiration Date NONEParties: From CONSOL. LAND CO. to OVCC

Description of land: No. Acres _____

County BelmontTownship SmithSections 23

Lots _____

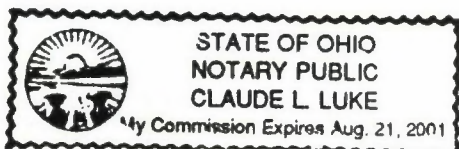
Parcel # 1-22-9Explanation of legal rights claimed See Addendum to Page 10, Part 1, C(8)(b),Item 6Pending litigation _____ yes X no.

David L. Bartsch
Signature of Affiant

01/27/98
Date

Environmental Coordinator and Permit Administrator
Position

Sworn before me and subscribed in my presence this 27 day of JAN, 1998.



Claude L. Luke
Notary Public

ORIGINAL

APR 01 1998

D0360-7

TOVCC 21310

RIGHT OF ENTRY INFORMATION

C.(8)(B) Provide either of the following to allow for coal mining operations on the underground workings.

- (i) A copy of the documents, or
- (ii) An affidavit wherein the documents are described. For all documents or affidavits provided for the shadow area, the specific parcels are to be identified on the application map.

AFFIDAVIT

State of Ohio, Belmont County, ss. David L. Bartsch being first duly sworn, says that the following described documents convey to the applicant the legal right explained below and is a subject of litigation as shown below.

Type of Document LIMITED WARRANTY DEED

Execution Date 05/01/97

Expiration Date NONE

Parties: From CONSOL. LAND CO. to OVCC

Description of land: No. Acres _____

County Belmont

Township Smith

Sections 23

Lots _____

Parcel # 1-22-10

Explanation of legal rights claimed See Addendum to Page 10, Part 1, C(8)(b),

Item 7

Pending litigation _____ yes X no.

David L. Bartsch

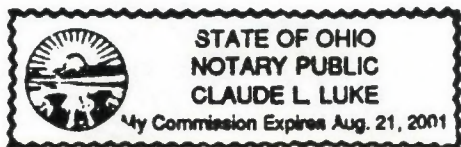
Signature of Affiant

01/27/98

Date

Environmental Coordinator and Permit Administrator
Position

Sworn before me and subscribed in my presence this 27 day of JAN., 19 98.



Claude L. Luke
Notary Public

ORIGINAL

APR 01 1998

D0360-7

RIGHT OF ENTRY INFORMATION

C.(8)(B) Provide either of the following to allow for coal mining operations on the underground workings.

- (i) A copy of the documents, or
- (ii) An affidavit wherein the documents are described. For all documents or affidavits provided for the shadow area, the specific parcels are to be identified on the application map.

AFFIDAVIT

State of Ohio, Belmont County, ss. David L. Bartsch being first duly sworn, says that the following described documents convey to the applicant the legal right explained below and is a subject of litigation as shown below.

Type of Document

LIMITED WARRANTY DEEDExecution Date 05/01/97Expiration Date NONEParties: From CONSOL. LAND CO. to OVCC

Description of land: No. Acres _____

County BelmontTownship SmithSections 29

Lots _____

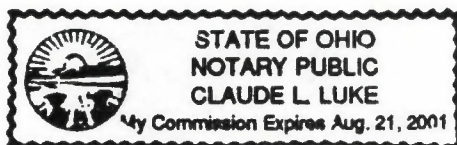
Parcel # 1-22-11Explanation of legal rights claimed See Addendum to Page 10, Part 1, C(8)(b),Item 8Pending litigation _____ yes X no.

David L. Bartsch
Signature of Affiant

01/27/98
Date

Environmental Coordinator and Permit Administrator
Position

Sworn before me and subscribed in my presence this 27 day of JAN., 19 98.



Claude L. Luke
Notary Public

ORIGINAL

APR 01 1998

D0360-7

RIGHT OF ENTRY INFORMATION

C.(8)(B) Provide either of the following to allow for coal mining operations on the underground workings.

- (i) A copy of the documents, or
- (ii) An affidavit wherein the documents are described. For all documents or affidavits provided for the shadow area, the specific parcels are to be identified on the application map.

AFFIDAVIT

State of Ohio, Belmont County, ss. David L. Bartsch being first duly sworn, says that the following described documents convey to the applicant the legal right explained below and is a subject of litigation as shown below.

Type of Document LIMITED WARRANTY DEED

Execution Date 05/01/97

Expiration Date NONE

Parties: From CONSOL. LAND CO. to OVCC

Description of land: No. Acres _____

County Belmont

Township Smith

Sections 29

Lots _____

Parcel # 1-22-12

Explanation of legal rights claimed See Addendum to Page 10, Part 1, C(8)(b).

Item 9

Pending litigation _____ yes X no.

David L. Bartsch

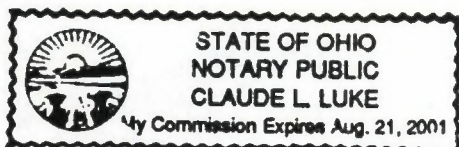
Signature of Affiant

01/27/98

Date

Environmental Coordinator and Permit Administrator
Position

Sworn before me and subscribed in my presence this 27 day of JAN., 19 98.



Claude L. Luke
Notary Public

ORIGINAL

APR 01 1998

D0360-7

TOVCC 21313

RIGHT OF ENTRY INFORMATION

C.(8)(B) Provide either of the following to allow for coal mining operations on the **underground workings**.

- (i) A copy of the documents, or
- (ii) An affidavit wherein the documents are described. For all documents or affidavits provided for the shadow area, the specific parcels are to be identified on the application map.

AFFIDAVIT

State of Ohio, Belmont County, ss. David L. Bartsch being first duly sworn, says that the following described documents convey to the applicant the legal right explained below and is a subject of litigation as shown below.

Type of Document

LIMITED WARRANTY DEEDExecution Date 05/01/97Expiration Date NONEParties: From CONSOL. LAND CO. to OVCC

Description of land: No. Acres _____

County BelmontTownship SmithSections 29

Lots _____

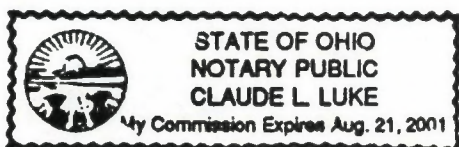
Parcel # 1-22-15Explanation of legal rights claimed See Addendum to Page 10, Part 1, C(8)(b),Item 10Pending litigation _____ yes X no.

David L. Bartsch
Signature of Affiant

01/27/98
Date

Environmental Coordinator and Permit Administrator
Position

Sworn before me and subscribed in my presence this 27 day of JAN., 19 98.



Claude L. Luke
Notary Public

ORIGINAL

D0360-7

APR 01 1998

TOVCC 21314

RIGHT OF ENTRY INFORMATION

C.(8)(B) Provide either of the following to allow for coal mining operations on the underground workings.

- (i) A copy of the documents, or
- (ii) An affidavit wherein the documents are described. For all documents or affidavits provided for the shadow area, the specific parcels are to be identified on the application map.

AFFIDAVIT

State of Ohio, Belmont County, ss. David L. Bartsch being first duly sworn, says that the following described documents convey to the applicant the legal right explained below and is a subject of litigation as shown below.

Type of Document LIMITED WARRANTY DEED

Execution Date 05/01/97

Expiration Date NONE

Parties: From CONSOL. LAND CO. to OVCC

Description of land: No. Acres _____

County Belmont

Township Smith

Sections 29

Lots _____

Parcel # 1-22-17

Explanation of legal rights claimed See Addendum to Page 10, Part 1, C(8)(b),

Item 11

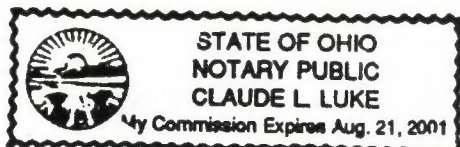
Pending litigation _____ yes X no.

David L. Bartsch
Signature of Affiant

01/27/98
Date

Environmental Coordinator and Permit Administrator
Position

Sworn before me and subscribed in my presence this 27 day of JAN., 19 98.



Claude L. Luke
Notary Public

ORIGINAL

APR 01 1998

D0360-7

TOVCC 21315

RIGHT OF ENTRY INFORMATION

C.(8)(B) Provide either of the following to allow for coal mining operations on the underground workings.

- (i) A copy of the documents, or
- (ii) An affidavit wherein the documents are described. For all documents or affidavits provided for the shadow area, the specific parcels are to be identified on the application map.

AFFIDAVIT

State of Ohio, Belmont County, ss. David L. Bartsch being first duly sworn, says that the following described documents convey to the applicant the legal right explained below and is a subject of litigation as shown below.

Type of Document

LIMITED WARRANTY DEEDExecution Date 05/01/97Expiration Date NONEParties: From CONSOL. LAND CO. to OVCC

Description of land: No. Acres _____

County BelmontTownship SmithSections 29

Lots _____

Parcel # 1-22-18Explanation of legal rights claimed See Addendum to Page 10, Part 1, C(8)(b),Item 12Pending litigation _____ yes X no.

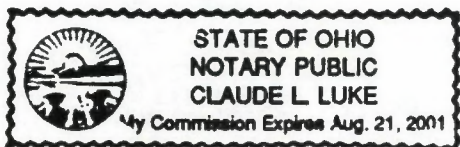
David L. Bartsch
Signature of Affiant

01/27/98

Date

Environmental Coordinator and Permit Administrator
Position

Sworn before me and subscribed in my presence this 27 day of JAN, 1998.



Claude L. Luke
Notary Public

ORIGINAL

APR 01 1998

D0360-7

RIGHT OF ENTRY INFORMATION

C.(8)(B) Provide either of the following to allow for coal mining operations on the **underground workings.**

- (i) A copy of the documents, or
- (ii) An affidavit wherein the documents are described. For all documents or affidavits provided for the shadow area, the specific parcels are to be identified on the application map.

AFFIDAVIT

State of Ohio, Belmont County, ss. David L. Bartsch being first duly sworn, says that the following described documents convey to the applicant the legal right explained below and is a subject of litigation as shown below.

Type of Document

LIMITED WARRANTY DEEDExecution Date 05/01/97Expiration Date NONEParties: From CONSOL. LAND CO. to OVCC

Description of land: No. Acres _____

County BelmontTownship SmithSections 29

Lots _____

Parcel # 1-22-19Explanation of legal rights claimed See Addendum to Page 10, Part 1, C(8)(b),Item 13Pending litigation _____ yes X no.

David L. Bartsch

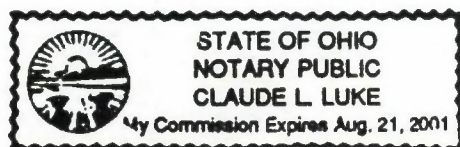
Signature of Affiant

01/27/98

Date

Environmental Coordinator and Permit Administrator
Position

Sworn before me and subscribed in my presence this 27 day of JAN., 1998.



Notary Public

ORIGINAL

APR 01 1998

D0360-7

TOVCC 21317

RIGHT OF ENTRY INFORMATION

C.(8)(B) Provide either of the following to allow for coal mining operations on the **underground workings.**

- (i) A copy of the documents, or
- (ii) An affidavit wherein the documents are described. For all documents or affidavits provided for the shadow area, the specific parcels are to be identified on the application map.

AFFIDAVIT

State of Ohio, Belmont County, ss. David L. Bartsch being first duly sworn, says that the following described documents convey to the applicant the legal right explained below and is a subject of litigation as shown below.

Type of Document

LIMITED WARRANTY DEEDExecution Date 05/01/97Expiration Date NONEParties: From CONSOL. LAND CO. to OVCC

Description of land: No. Acres _____

County BelmontTownship SmithSections 29, 30

Lots _____

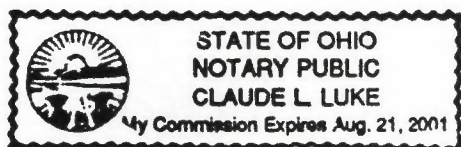
Parcel # 1-22-21Explanation of legal rights claimed See Addendum to Page 10, Part 1, C(4)(b),Item 14Pending litigation _____ yes X no.

David L. Bartsch
Signature of Affiant

01/27/98
Date

Environmental Coordinator and Permit Administrator
Position

Sworn before me and subscribed in my presence this 27 day of JAN., 19 98.



Claude L. Luke
Notary Public

ORIGINAL

APR 01 1998

D0360-7

TOVCC 21318

RIGHT OF ENTRY INFORMATION

C.(8)(B) Provide either of the following to allow for coal mining operations on the underground workings.

- (i) A copy of the documents, or
- (ii) An affidavit wherein the documents are described. For all documents or affidavits provided for the shadow area, the specific parcels are to be identified on the application map.

AFFIDAVIT

State of Ohio, Belmont County, ss. David L. Bartsch being first duly sworn, says that the following described documents convey to the applicant the legal right explained below and is a subject of litigation as shown below.

Type of Document LIMITED WARRANTY DEED

Execution Date 05/01/97

Expiration Date NONE

Parties: From CONSOL. LAND CO. to OVCC

Description of land: No. Acres _____

County Belmont

Township Smith

Sections 29, 30

Lots _____

Parcel # 1-22-22

Explanation of legal rights claimed See Addendum to Page 10, Part 1, C(8)(b),

Item 15

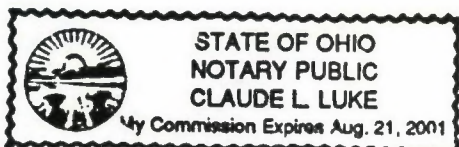
Pending litigation _____ yes X no.

David L. Bartsch
Signature of Affiant

01/27/98
Date

Environmental Coordinator and Permit Administrator
Position

Sworn before me and subscribed in my presence this 27 day of Jan., 19 98.



Claude L. Luke
Notary Public

ORIGINAL

D0360-7

APR 01 1998

TOVCC 21319

RIGHT OF ENTRY INFORMATION

C.(8)(B) Provide either of the following to allow for coal mining operations on the underground workings.

- (i) A copy of the documents, or
- (ii) An affidavit wherein the documents are described. For all documents or affidavits provided for the shadow area, the specific parcels are to be identified on the application map.

AFFIDAVIT

State of Ohio, Belmont County, ss. David L. Bartsch being first duly sworn, says that the following described documents convey to the applicant the legal right explained below and is a subject of litigation as shown below.

Type of Document

LIMITED WARRANTY DEEDExecution Date 05/01/97Expiration Date NONEParties: From CONSOL. LAND CO. to OVCC

Description of land: No. Acres _____

County BelmontTownship SmithSections 29, 35

Lots _____

Parcel # 1-22-23Explanation of legal rights claimed See Addendum to Page 10, Part 1, C(8)(b),Item 16Pending litigation _____ yes X no.

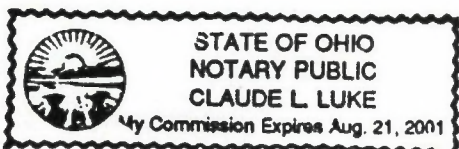
David L. Bartsch
Signature of Affiant

01/27/98

Date

Environmental Coordinator and Permit Administrator
Position

Sworn before me and subscribed in my presence this 27 day of JAN., 19 98.



Claude L. Luke
Notary Public

ORIGINAL

APR 01 1998

D0360-7

TOVCC 21320

RIGHT OF ENTRY INFORMATION

C.(8)(B) Provide either of the following to allow for coal mining operations on the underground workings.

- (i) A copy of the documents, or
- (ii) An affidavit wherein the documents are described. For all documents or affidavits provided for the shadow area, the specific parcels are to be identified on the application map.

AFFIDAVIT

State of Ohio, Belmont County, ss. David L. Bartsch being first duly sworn, says that the following described documents convey to the applicant the legal right explained below and is a subject of litigation as shown below.

Type of Document LIMITED WARRANTY DEED

Execution Date 05/01/97

Expiration Date NONE

Parties: From CONSOL. LAND CO. to OVCC

Description of land: No. Acres _____

County Belmont

Township Smith

Sections 30

Lots _____

Parcel # 1-22-24

Explanation of legal rights claimed See Addendum to Page 10, Part 1, C(8)(b),

Item 17

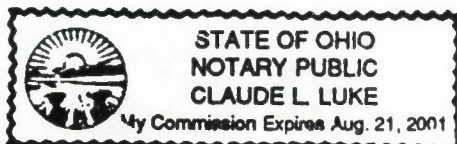
Pending litigation _____ yes X no.

David L. Bartsch
Signature of Affiant

01/27/98
Date

Environmental Coordinator and Permit Administrator
Position

Sworn before me and subscribed in my presence this 27 day of JAN, 19 98.



Claude L. Luke
Notary Public

ORIGINAL

APR 01 1998

D0360-7

TOVCC 21321

RIGHT OF ENTRY INFORMATION

C.(8)(B) Provide either of the following to allow for coal mining operations on the underground workings.

- (i) A copy of the documents, or
- (ii) An affidavit wherein the documents are described. For all documents or affidavits provided for the shadow area, the specific parcels are to be identified on the application map.

AFFIDAVIT

State of Ohio, Belmont County, ss. David L. Bartsch being first duly sworn, says that the following described documents convey to the applicant the legal right explained below and is a subject of litigation as shown below.

Type of Document LIMITED WARRANTY DEED

Execution Date 05/01/97

Expiration Date NONE

Parties: From CONSOL. LAND CO. to OVCC

Description of land: No. Acres _____

County Belmont

Township Smith

Sections 30

Lots _____

Parcel # 1-22-29

Explanation of legal rights claimed See Addendum to Page 10, Part 1, C(8)(b),

Item 18

Pending litigation _____ yes X no.

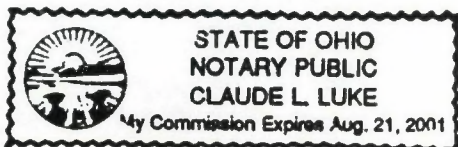
David L. Bartsch
Signature of Affiant

01/27/98

Date

Environmental Coordinator and Permit Administrator
Position

Sworn before me and subscribed in my presence this 27 day of JAN., 1998.



Claude L. Luke
Notary Public

ORIGINAL

D0360-7

APR 01 1998

TOVCC 21322

RIGHT OF ENTRY INFORMATION

C.(8)(B) Provide either of the following to allow for coal mining operations on the underground workings.

- (i) A copy of the documents, or
- (ii) An affidavit wherein the documents are described. For all documents or affidavits provided for the shadow area, the specific parcels are to be identified on the application map.

AFFIDAVIT

State of Ohio, Belmont County, ss. David L. Bartsch being first duly sworn, says that the following described documents convey to the applicant the legal right explained below and is a subject of litigation as shown below.

Type of Document LIMITED WARRANTY DEED

Execution Date 05/01/97

Expiration Date NONE

Parties: From CONSOL. LAND CO. to OVCC

Description of land: No. Acres _____

County Belmont

Township Smith

Sections 29,30

Lots _____

Parcel # 1-22-30

Explanation of legal rights claimed See Addendum to Page 1 of Part 1, C(8)(b),

Item 19

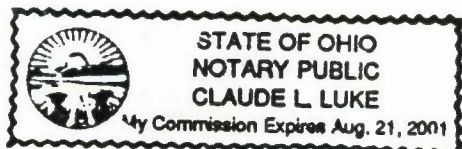
Pending litigation _____ yes X no.

David L. Bartsch
Signature of Affiant

01/27/98
Date

Environmental Coordinator and Permit Administrator
Position

Sworn before me and subscribed in my presence this 27 day of JAN., 19 98.



Claude L. Luke
Notary Public

ORIGINAL APR 01 1998

00360-7

TOVCC 21323

RIGHT OF ENTRY INFORMATION

C.(8)(B) Provide either of the following to allow for coal mining operations on the **underground workings.**

- (i) A copy of the documents, or
- (ii) An affidavit wherein the documents are described. For all documents or affidavits provided for the shadow area, the specific parcels are to be identified on the application map.

AFFIDAVIT

State of Ohio, Belmont County, ss. David L. Bartsch being first duly sworn, says that the following described documents convey to the applicant the legal right explained below and is a subject of litigation as shown below.

Type of Document

LIMITED WARRANTY DEEDExecution Date 05/01/97Expiration Date NONEParties: From CONSOL. LAND CO. to OVCC

Description of land: No. Acres _____

County BelmontTownship SmithSections 34

Lots _____

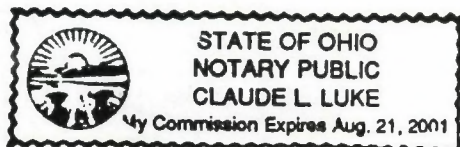
Parcel # 1-22-52Explanation of legal rights claimed See Addendum to Page 10, Part 1, C(8)(b),Item 20Pending litigation _____ yes X no.

David L. Bartsch
Signature of Affiant

01/27/98
Date

Environmental Coordinator and Permit Administrator
Position

Sworn before me and subscribed in my presence this 27 day of JAN., 19 98.



Claude L. Luke
Notary Public

ORIGINAL

APR 01 1998

D0360-7

TOVCC 21324

RIGHT OF ENTRY INFORMATION

C.(8)(B) Provide either of the following to allow for coal mining operations on the **underground workings.**

- (i) A copy of the documents, or
- (ii) An affidavit wherein the documents are described. For all documents or affidavits provided for the shadow area, the specific parcels are to be identified on the application map.

AFFIDAVIT

State of Ohio, Belmont County, ss. David L. Bartsch being first duly sworn, says that the following described documents convey to the applicant the legal right explained below and is a subject of litigation as shown below.

Type of Document

LIMITED WARRANTY DEEDExecution Date 05/01/97Expiration Date NONEParties: From CONSOL. LAND CO. to OVCC

Description of land: No. Acres _____

County BelmontTownship SmithSections 34

Lots _____

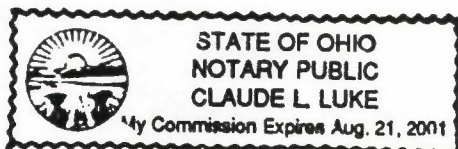
Parcel # 1-22-53Explanation of legal rights claimed See Addendum to Page 10, Part 1, C(8)(b),Item 21Pending litigation _____ yes ☒ no.

David L. Bartsch
Signature of Affiant

01/27/98
Date

Environmental Coordinator and Permit Administrator
Position

Sworn before me and subscribed in my presence this 27 day of JAN., 1998.



Claude L. Luke
Notary Public

ORIGINAL

APR 01 1998

D0360-7

RIGHT OF ENTRY INFORMATION

C.(8)(B) Provide either of the following to allow for coal mining operations on the underground workings.

- (i) A copy of the documents, or
- (ii) An affidavit wherein the documents are described. For all documents or affidavits provided for the shadow area, the specific parcels are to be identified on the application map.

AFFIDAVIT

State of Ohio, Belmont County, ss. David L. Bartsch being first duly sworn, says that the following described documents convey to the applicant the legal right explained below and is a subject of litigation as shown below.

Type of Document

LIMITED WARRANTY DEEDExecution Date 05/01/97Expiration Date NONEParties: From CONSOL. LAND CO. to OVCC

Description of land: No. Acres _____

County BelmontTownship SmithSections 35

Lots _____

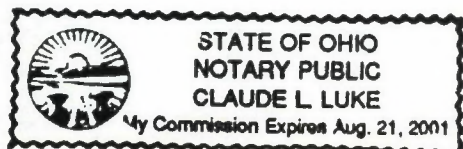
Parcel # 1-22-57Explanation of legal rights claimed See Addendum to Page 10, Part 1, C(8)(b),Item 22Pending litigation _____ yes X no.

David L. Bartsch
Signature of Affiant

01/27/98
Date

Environmental Coordinator and Permit Administrator
Position

Sworn before me and subscribed in my presence this 27 day of JAN., 19 98.



Claude L. Luke
Notary Public

ORIGINAL

APR 01 1998

D0360-7

TOVCC 21326

RIGHT OF ENTRY INFORMATION

C.(8)(B) Provide either of the following to allow for coal mining operations on the **underground workings.**

- (i) A copy of the documents, or
- (ii) An affidavit wherein the documents are described. For all documents or affidavits provided for the shadow area, the specific parcels are to be identified on the application map.

AFFIDAVIT

State of Ohio, Belmont County, ss. David L. Bartsch being first duly sworn, says that the following described documents convey to the applicant the legal right explained below and is a subject of litigation as shown below.

Type of Document LIMITED WARRANTY DEED

Execution Date 05/01/97

Expiration Date NONE

Parties: From CONSOL. LAND CO. to OVCC

Description of land: No. Acres _____

County Belmont

Township Smith

Sections 35

Lots _____

Parcel # 1-22-59

Explanation of legal rights claimed See Addendum to Page 10, Part 1, C(8)(b),

Item 23

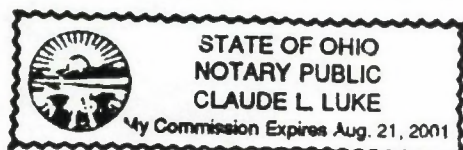
Pending litigation _____ yes X no.

David L. Bartsch
Signature of Affiant

01/27/98
Date

Environmental Coordinator and Permit Administrator
Position

Sworn before me and subscribed in my presence this 27 day of JAN., 1998.



Claude L. Luke
Notary Public

ORIGINAL
APR 01 1998

D0360-7

TOVCC 21327

RIGHT OF ENTRY INFORMATION

C.(8)(B) Provide either of the following to allow for coal mining operations on the underground workings.

- (i) A copy of the documents, or
- (ii) An affidavit wherein the documents are described. For all documents or affidavits provided for the shadow area, the specific parcels are to be identified on the application map.

AFFIDAVIT

State of Ohio, Belmont County, ss. David L. Bartsch being first duly sworn, says that the following described documents convey to the applicant the legal right explained below and is a subject of litigation as shown below.

Type of Document

LIMITED WARRANTY DEEDExecution Date 05/01/97Expiration Date NONEParties: From CONSOL. LAND CO. to OVCC

Description of land: No. Acres _____

County BelmontTownship SmithSections 34,35

Lots _____

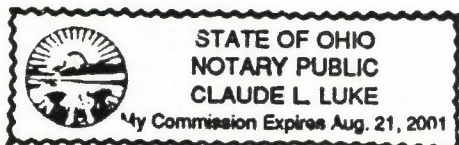
Parcel # 1-24-1, -2, -3, -4Explanation of legal rights claimed See Addendum to Page 10, Part 1, C(8)(b),Item 24Pending litigation _____ yes X no.

David L. Bartsch
Signature of Affiant

01/27/98
Date

Environmental Coordinator and Permit Administrator
Position

Sworn before me and subscribed in my presence this 27 day of JAN., 19 98.



Claude L. Luke
Notary Public

ORIGINAL

00360-7

APR 01 1998

TOVCC 21328

RIGHT OF ENTRY INFORMATION

C.(8)(B) Provide either of the following to allow for coal mining operations on the **underground workings.**

- (i) A copy of the documents, or
- (ii) An affidavit wherein the documents are described. For all documents or affidavits provided for the shadow area, the specific parcels are to be identified on the application map.

AFFIDAVIT

State of Ohio, Belmont County, ss. David L. Bartsch being first duly sworn, says that the following described documents convey to the applicant the legal right explained below and is a subject of litigation as shown below.

Type of Document LIMITED WARRANTY DEED

Execution Date 05/01/97

Expiration Date NONE

Parties: From CONSOL. LAND CO. to OVCC

Description of land: No. Acres _____

County Belmont

Township Smith

Sections 23

Lots _____

Parcel # 1-25-1

Explanation of legal rights claimed See Addendum to Page 10, Part 1, C(8)(b),

Item 25

Pending litigation _____ yes X no.

David L. Bartsch

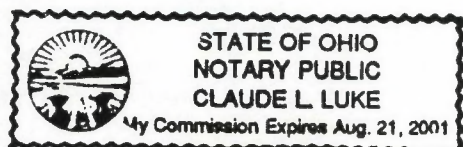
Signature of Affiant

01/27/98

Date

Environmental Coordinator and Permit Administrator
Position

Sworn before me and subscribed in my presence this 27 day of JAN., 19 98.



Claude L. Luke
Notary Public

ORIGINAL

D0360-7

APR 01 1998

TOVCC 21329

RIGHT OF ENTRY INFORMATION

C.(8)(B) Provide either of the following to allow for coal mining operations on the underground workings.

- (i) A copy of the documents, or
- (ii) An affidavit wherein the documents are described. For all documents or affidavits provided for the shadow area, the specific parcels are to be identified on the application map.

AFFIDAVIT

State of Ohio, Belmont County, ss. David L. Bartsch being first duly sworn, says that the following described documents convey to the applicant the legal right explained below and is a subject of litigation as shown below.

Type of Document LIMITED WARRANTY DEED

Execution Date 05/01/97

Expiration Date NONE

Parties: From CONSOL. LAND CO. to OVCC

Description of land: No. Acres _____

County Belmont

Township Smith

Sections 23

Lots _____

Parcel # 1-26-1

Explanation of legal rights claimed See Addendum to Page 10, Part 1, C(8)(b),

Item 26

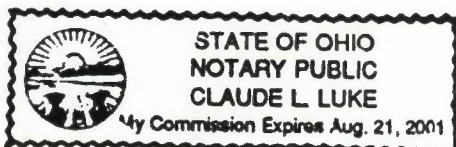
Pending litigation _____ yes X no.

David L. Bartsch
Signature of Affiant

01/27/98
Date

Environmental Coordinator and Permit Administrator
Position

Sworn before me and subscribed in my presence this 27 day of JAN., 1998.



Claude L. Luke
Notary Public

APR 01 1998 D0360-7

TOVCC 21330

RIGHT OF ENTRY INFORMATION

C.(8)(B) Provide either of the following to allow for coal mining operations on the underground workings.

- (i) A copy of the documents, or
- (ii) An affidavit wherein the documents are described. For all documents or affidavits provided for the shadow area, the specific parcels are to be identified on the application map.

AFFIDAVIT

State of Ohio, Belmont County, ss. David L. Bartsch being first duly sworn, says that the following described documents convey to the applicant the legal right explained below and is a subject of litigation as shown below.

Type of Document

LIMITED WARRANTY DEEDExecution Date 05/01/97Expiration Date NONEParties: From CONSOL. LAND CO. to OVCC

Description of land: No. Acres _____

County BelmontTownship SmithSections 35, 36

Lots _____

Parcel # 1-27-1Explanation of legal rights claimed See Addendum to Page 10, Part 1, C(8)(b).Item 27Pending litigation _____ yes X no.

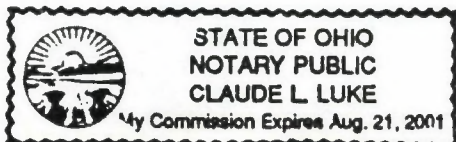
Signature of Affiant

01/27/98

Date

Environmental Coordinator and Permit Administrator
Position

Sworn before me and subscribed in my presence this 27 day of JAN., 19 98.



Notary Public

ORIGINAL **D0360-7**
APR 01 1998

TOVCC 21331

RIGHT OF ENTRY INFORMATION

C.(8)(B) Provide either of the following to allow for coal mining operations on the underground workings.

- (i) A copy of the documents, or
- (ii) An affidavit wherein the documents are described. For all documents or affidavits provided for the shadow area, the specific parcels are to be identified on the application map.

AFFIDAVIT

State of Ohio, Belmont County, ss. David L. Bartsch being first duly sworn, says that the following described documents convey to the applicant the legal right explained below and is a subject of litigation as shown below.

Type of Document LIMITED WARRANTY DEED

Execution Date 05/01/97

Expiration Date NONE

Parties: From CONSOL. LAND CO. to OVCC

Description of land: No. Acres _____

County Belmont

Township Smith

Sections 36

Lots _____

Parcel # 1-28-1

Explanation of legal rights claimed See Addendum to Page 10, Part 1, C(8)(b),

Item 28

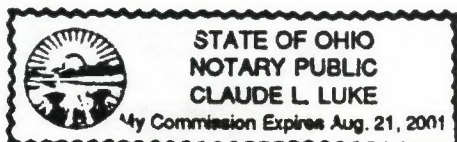
Pending litigation _____ yes X no.

David L. Bartsch
Signature of Affiant

01/27/98
Date

Environmental Coordinator and Permit Administrator
Position

Sworn before me and subscribed in my presence this 27 day of JAN, 19 98.



Claude L. Luke
Notary Public

ORIGINAL

APR 01 1998

D0360-7

TOVCC 21332

RIGHT OF ENTRY INFORMATION

C.(8)(B) Provide either of the following to allow for coal mining operations on the underground workings.

- (i) A copy of the documents, or
- (ii) An affidavit wherein the documents are described. For all documents or affidavits provided for the shadow area, the specific parcels are to be identified on the application map.

AFFIDAVIT

State of Ohio, Belmont County, ss. David L. Bartsch being first duly sworn, says that the following described documents convey to the applicant the legal right explained below and is a subject of litigation as shown below.

Type of Document

LIMITED WARRANTY DEEDExecution Date 05/01/97Expiration Date NONEParties: From CONSOL. LAND CO. to OVCC

Description of land: No. Acres _____

County BelmontTownship SmithSections 24

Lots _____

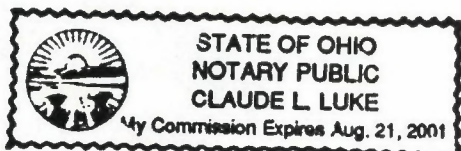
Parcel # 1-19-29Explanation of legal rights claimed See Addendum to Page 10, Part 1, C(8)(b),Item 29Pending litigation _____ yes X no.

David L. Bartsch
Signature of Affiant

01/27/98
Date

Environmental Coordinator and Permit Administrator
Position

Sworn before me and subscribed in my presence this 27 day of JAN., 19 98.



Notary Public

Claude L. Luke
ORIGINAL D0360-7

APR 01 1998

TOVCC 21333

RIGHT OF ENTRY INFORMATION

C.(8)(B) Provide either of the following to allow for coal mining operations on the **underground workings.**

- (i) A copy of the documents, or
- (ii) An affidavit wherein the documents are described. For all documents or affidavits provided for the shadow area, the specific parcels are to be identified on the application map.

AFFIDAVIT

State of Ohio, Belmont County, ss. David L. Bartsch being first duly sworn, says that the following described documents convey to the applicant the legal right explained below and is a subject of litigation as shown below.

Type of Document

WARRANTY DEEDExecution Date 12/29/70Expiration Date NONEParties: From N. AMER. COAL CORP. to OVCC (FORMERLY NACCO MINING CO)

Description of land: No. Acres _____

County BelmontTownship SmithSections 22

Lots _____

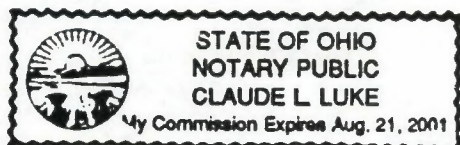
Parcel # 76Explanation of legal rights claimed See Addendum to Page 10, Part 1, C(8)(b),Item 30Pending litigation _____ yes X no.

David L. Bartsch
Signature of Affiant

01/27/98
Date

Environmental Coordinator and Permit Administrator
Position

Sworn before me and subscribed in my presence this 27 day of JAN., 1998.



Claude L. Luke
Notary Public

ORIGINAL

D0360-7
APR 01 1998

TOVCC 21334

RIGHT OF ENTRY INFORMATION

C.(8)(B) Provide either of the following to allow for coal mining operations on the **underground workings.**

- (i) A copy of the documents, or
- (ii) An affidavit wherein the documents are described. For all documents or affidavits provided for the shadow area, the specific parcels are to be identified on the application map.

AFFIDAVIT

State of Ohio, Belmont County, ss. David L. Bartsch being first duly sworn, says that the following described documents convey to the applicant the legal right explained below and is a subject of litigation as shown below.

Type of Document

WARRANTY DEEDExecution Date 12/29/70Expiration Date NONEParties: From N. AMER. COAL CORP. to OVCC (FORMERLY NACCO MINING CO)

Description of land: No. Acres _____

County BelmontTownship SmithSections 22

Lots _____

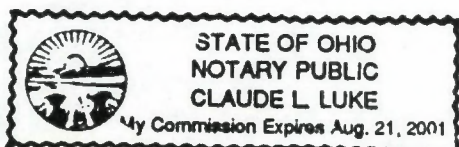
Parcel # 77-1, -2Explanation of legal rights claimed See Addendum to Page 10, Part 1, C(8)(b),Item 31Pending litigation _____ yes X no.

David L. Bartsch
Signature of Affiant

01/27/98
Date

Environmental Coordinator and Permit Administrator
Position

Sworn before me and subscribed in my presence this 27 day of Jan., 1998.



Claude L. Luke
Notary Public

ORIGINAL

D0360-7
APR 01 1998

TOVCC 21335

RIGHT OF ENTRY INFORMATION

C.(8)(B) Provide either of the following to allow for coal mining operations on the underground workings.

- (i) A copy of the documents, or
- (ii) An affidavit wherein the documents are described. For all documents or affidavits provided for the shadow area, the specific parcels are to be identified on the application map.

AFFIDAVIT

State of Ohio, Belmont County, ss. David L. Bartsch being first duly sworn, says that the following described documents convey to the applicant the legal right explained below and is a subject of litigation as shown below.

Type of Document

WARRANTY DEEDExecution Date 12/29/70Expiration Date NONEParties: From N. AMER. COAL CORP. to OVCC (FORMERLY NACCO MINING CO)

Description of land: No. Acres _____

County BelmontTownship SmithSections 22

Lots _____

Parcel # 78Explanation of legal rights claimed See Addendum to Page 10, Part 1, C(8)(b).Item 32Pending litigation _____ yes X no.

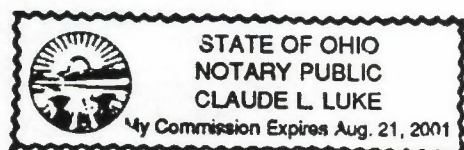
David L. Bartsch
Signature of Affiant

01/27/98

Date

Environmental Coordinator and Permit Administrator
Position

Sworn before me and subscribed in my presence this 27 day of JAN., 1998.



Claude L. Luke
Notary Public

ORIGINAL**D0360-7**

APR 01 1998

TOVCC 21336

RIGHT OF ENTRY INFORMATION

C.(8)(B) Provide either of the following to allow for coal mining operations on the underground workings.

- (i) A copy of the documents, or
- (ii) An affidavit wherein the documents are described. For all documents or affidavits provided for the shadow area, the specific parcels are to be identified on the application map.

AFFIDAVIT

State of Ohio, Belmont County, ss. David L. Bartsch being first duly sworn, says that the following described documents convey to the applicant the legal right explained below and is a subject of litigation as shown below.

Type of Document

WARRANTY DEEDExecution Date 12/29/70Expiration Date NONEParties: From N. AMER. COAL CORP. to OVCC (FORMERLY NACCO MINING CO)

Description of land: No. Acres _____

County BelmontTownship SmithSections 28

Lots _____

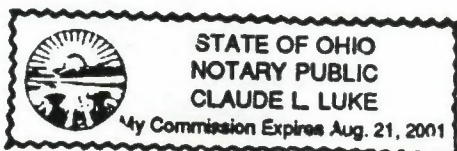
Parcel # 104Explanation of legal rights claimed See Addendum to Page 10, Part 1, C(8)(b),Item 33Pending litigation _____ yes X no.

David L. Bartsch
Signature of Affiant

01/27/98
Date

Environmental Coordinator and Permit Administrator
Position

Sworn before me and subscribed in my presence this 27 day of JAN., 19 98.



Claude L. Luke
Notary Public

ORIGINAL

APR 01 1998

TOVCC 21337

RIGHT OF ENTRY INFORMATION

C.(8)(B) Provide either of the following to allow for coal mining operations on the **underground workings**.

- (i) A copy of the documents, or
- (ii) An affidavit wherein the documents are described. For all documents or affidavits provided for the shadow area, the specific parcels are to be identified on the application map.

AFFIDAVIT

State of Ohio, Belmont County, ss. David L. Bartsch being first duly sworn, says that the following described documents convey to the applicant the legal right explained below and is a subject of litigation as shown below.

Type of Document

WARRANTY DEEDExecution Date 12/29/70Expiration Date NONEParties: From N. AMER. COAL CORP. to OVCC (FORMERLY NACCO MINING CO)

Description of land: No. Acres _____

County BelmontTownship SmithSections 28

Lots _____

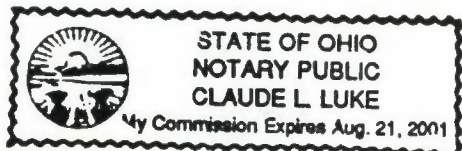
Parcel # 105Explanation of legal rights claimed See Addendum to Page 10, Part 1, C(8)(b),Item 34Pending litigation _____ yes X no.

David L. Bartsch
Signature of Affiant

01/27/98
Date

Environmental Coordinator and Permit Administrator
Position

Sworn before me and subscribed in my presence this 27 day of JAN., 1998.



Claude L. Luke
Notary Public
ORIGINAL
D0360-7
APR 01 1998

RIGHT OF ENTRY INFORMATION

C.(8)(B) Provide either of the following to allow for coal mining operations on the underground workings.

- (i) A copy of the documents, or
- (ii) An affidavit wherein the documents are described. For all documents or affidavits provided for the shadow area, the specific parcels are to be identified on the application map.

AFFIDAVIT

State of Ohio, Belmont County, ss. David L. Bartsch being first duly sworn, says that the following described documents convey to the applicant the legal right explained below and is a subject of litigation as shown below.

Type of Document

WARRANTY DEEDExecution Date 12/29/70Expiration Date NONEParties: From N. AMER. COAL CORP. to OVCC (FORMERLY NACCO MINING CO)

Description of land: No. Acres _____

County BelmontTownship SmithSections 28

Lots _____

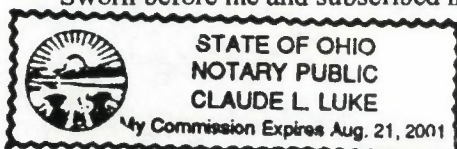
Parcel # 106Explanation of legal rights claimed See Addendum to Page 10, Part 1, C(8)(b),Item 35Pending litigation _____ yes X no.

David L. Bartsch
Signature of Affiant

01/27/98
Date

Environmental Coordinator and Permit Administrator
Position

Sworn before me and subscribed in my presence this 27 day of JAN., 19 98.



Claude L. Luke
Notary Public
ORIG. --- APR 01 1998
D0360-7

TOVCC 21339

RIGHT OF ENTRY INFORMATION

C.(8)(B) Provide either of the following to allow for coal mining operations on the **underground workings.**

- (i) A copy of the documents, or
- (ii) An affidavit wherein the documents are described. For all documents or affidavits provided for the shadow area, the specific parcels are to be identified on the application map.

AFFIDAVIT

State of Ohio, Belmont County, ss. David L. Bartsch being first duly sworn, says that the following described documents convey to the applicant the legal right explained below and is a subject of litigation as shown below.

Type of Document

WARRANTY DEEDExecution Date 12/29/70Expiration Date NONEParties: From N. AMER. COAL CORP. to OVCC (FORMERLY NACCO MINING CO)

Description of land: No. Acres _____

County BelmontTownship SmithSections 28

Lots _____

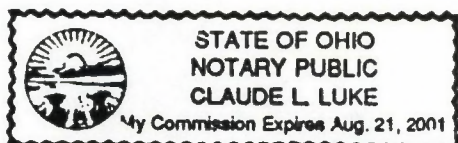
Parcel # 107Explanation of legal rights claimed See Addendum to Page 10, Part 1, C(8)(b),Item 36Pending litigation _____ yes X no.

David L. Bartsch
Signature of Affiant

01/27/98
Date

Environmental Coordinator and Permit Administrator
Position

Sworn before me and subscribed in my presence this 27 day of JAN., 19 98.



Claude L. Luke
Notary Public

ORIGINAL APR 01 1998

TOVCC 21340

RIGHT OF I RY INFORMATION

C.(8)(B) Provide either of the following to allow for coal mining operations on the underground workings.

- (i) A copy of the documents, or
- (ii) An affidavit wherein the documents are described. For all documents or affidavits provided for the shadow area, the specific parcels are to be identified on the application map.

AFFIDAVIT

State of Ohio, Belmont County, ss. David L. Bartsch being first duly sworn, says that the following described documents convey to the applicant the legal right explained below and is a subject of litigation as shown below.

Type of Document

WARRANTY DEEDExecution Date 12/29/70Expiration Date NONEParties: From N. AMER. COAL CORP. to OVCC (FORMERLY NACCO MINING CO)

Description of land: No. Acres _____

County BelmontTownship SmithSections 28

Lots _____

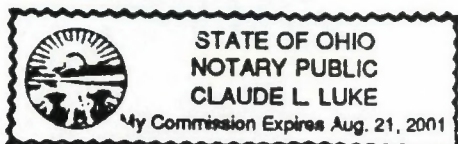
Parcel # 108Explanation of legal rights claimed See Addendum to Page 10, Part 1, C(8)(b),Item 37Pending litigation _____ yes X no.

David L. Bartsch
Signature of Affiant

01/27/98
Date

Environmental Coordinator and Permit Administrator
Position

Sworn before me and subscribed in my presence this 27 day of JAN., 1998.



Claude L. Luke
Notary Public

ORIGINAL**D0360-7****APR 01 1998**

TOVCC 21341

RIGHT OF ENTRY INFORMATION

C.(8)(B) Provide either of the following to allow for coal mining operations on the underground workings.

- (i) A copy of the documents, or
- (ii) An affidavit wherein the documents are described. For all documents or affidavits provided for the shadow area, the specific parcels are to be identified on the application map.

AFFIDAVIT

State of Ohio, Belmont County, ss. David L. Bartsch being first duly sworn, says that the following described documents convey to the applicant the legal right explained below and is a subject of litigation as shown below.

Type of Document

WARRANTY DEEDExecution Date 12/29/70Expiration Date NONEParties: From N. AMER. COAL CORP. to OVCC (FORMERLY NACCO MINING CO)

Description of land: No. Acres _____

County BelmontTownship SmithSections 28

Lots _____

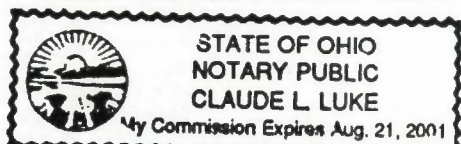
Parcel # 109Explanation of legal rights claimed See Addendum to Page 10, Part 1, C(8)(b),Item 38Pending litigation _____ yes X no.

David L. Bartsch
Signature of Affiant

01/27/98
Date

Environmental Coordinator and Permit Administrator
Position

Sworn before me and subscribed in my presence this 27 day of JAN., 19 98.



Claude L. Luke
Notary Public

ORIGINAL APR 01 1998

D0360-7

TOVCC 21342

RIGHT OF ENTRY INFORMATION

C.(8)(B) Provide either of the following to allow for coal mining operations on the **underground workings.**

- (i) A copy of the documents, or
- (ii) An affidavit wherein the documents are described. For all documents or affidavits provided for the shadow area, the specific parcels are to be identified on the application map.

AFFIDAVIT

State of Ohio, Belmont County, ss. David L. Bartsch being first duly sworn, says that the following described documents convey to the applicant the legal right explained below and is a subject of litigation as shown below.

Type of Document

WARRANTY DEEDExecution Date 04/30/96Expiration Date 06/30/11Parties: From BOUROUGH CO to OVCC

Description of land: No. Acres _____

County BelmontTownship SmithSections 22, 23

Lots _____

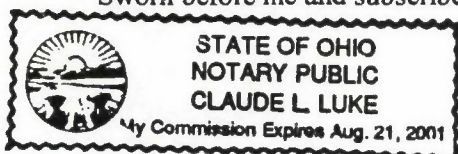
Parcel # T2, T3Explanation of legal rights claimed See Addendum to Page 10, Part 1, C(8)(b),Item 39Pending litigation _____ yes X no.

David L. Bartsch
Signature of Affiant

01/27/98
Date

Environmental Coordinator and Permit Administrator
Position

Sworn before me and subscribed in my presence this 27 day of JAN., 1998.



Claude L. Luke
Notary Public

ORIGINAL

APR 01 1998

D0360-7

RIGHT OF ENTRY INFORMATION

C.(8)(B) Provide either of the following to allow for coal mining operations on the underground workings.

- (i) A copy of the documents, or
- (ii) An affidavit wherein the documents are described. For all documents or affidavits provided for the shadow area, the specific parcels are to be identified on the application map.

AFFIDAVIT

State of Ohio, Belmont County, ss. David L. Bartsch being first duly sworn, says that the following described documents convey to the applicant the legal right explained below and is a subject of litigation as shown below.

Type of Document LIMITED WARRANTY DEED

Execution Date 05/01/97

Expiration Date NONE

Parties: From CONSOL. LAND CO. to OVCC

Description of land: No. Acres _____

County Belmont

Township Smith

Sections 35

Lots _____

Parcel # 1-22-60

Explanation of legal rights claimed See Addendum to Page 10, Part 1, C(8)(b),

Item 40

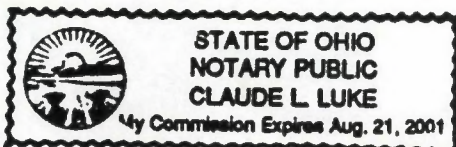
Pending litigation _____ yes X no.

David L. Bartsch
Signature of Affiant

01/27/98
Date

Environmental Coordinator and Permit Administrator
Position

Sworn before me and subscribed in my presence this 27 day of JAN., 19 98.



Claude L. Luke
Notary Public

ORIGINAL

D0360-7

APR 01 1998

TOVCC 21344

RIGHT OF ENTRY INFORMATION

C.(8)(B) Provide either of the following to allow for coal mining operations on the **underground workings.**

- (i) A copy of the documents, or
- (ii) An affidavit wherein the documents are described. For all documents or affidavits provided for the shadow area, the specific parcels are to be identified on the application map.

AFFIDAVIT

State of Ohio, Belmont County, ss. David L. Bartsch being first duly sworn, says that the following described documents convey to the applicant the legal right explained below and is a subject of litigation as shown below.

Type of Document

LIMITED WARRANTY DEEDExecution Date 05/01/97Expiration Date NONEParties: From CONSOL. LAND CO. to OVCC

Description of land: No. Acres _____

County BelmontTownship SmithSections 29

Lots _____

Parcel # 1-22-20Explanation of legal rights claimed See Addendum to Page 10, Part 1, C(8)(b),Item 41Pending litigation _____ yes _____ X no.

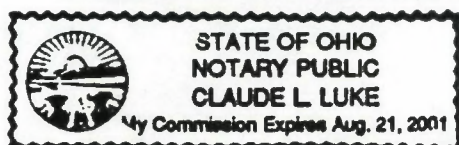
David L. Bartsch
Signature of Affiant

01/27/98

Date

Environmental Coordinator and Permit Administrator
Position

Sworn before me and subscribed in my presence this 27 day of JAN., 1998.



Claude L. Luke
Notary Public

ORIGINAL**D0360-7****APR 01 1998**

TOVCC 21345

RIGHT OF ENTRY INFORMATION

C.(8)(B) Provide either of the following to allow for coal mining operations on the underground workings.

- (i) A copy of the documents, or
- (ii) An affidavit wherein the documents are described. For all documents or affidavits provided for the shadow area, the specific parcels are to be identified on the application map.

AFFIDAVIT

State of Ohio, Belmont County, ss. David L. Bartsch being first duly sworn, says that the following described documents convey to the applicant the legal right explained below and is a subject of litigation as shown below.

Type of Document LIMITED WARRANTY DEED

Execution Date 05/01/97

Expiration Date NONE

Parties: From CONSOL. LAND CO. to OVCC

Description of land: No. Acres _____

County Belmont

Township Smith

Sections 29

Lots _____

Parcel # 1-22-16

Explanation of legal rights claimed See Addendum to Page 10, Part 1, C(8)(b),

Item 42

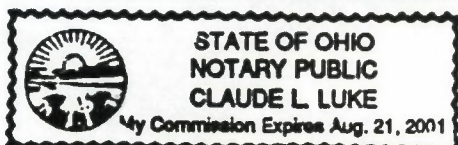
Pending litigation _____ yes X no.

David L. Bartsch
Signature of Affiant

01/27/98
Date

Environmental Coordinator and Permit Administrator
Position

Sworn before me and subscribed in my presence this 27 day of JAN., 1998.



Claude L. Luke
Notary Public

ORIGINAL

D0360-7

APR 01 1998

TOVCC 21346

RIGHT OF ENTRY INFORMATION

C.(8)(B) Provide either of the following to allow for coal mining operations on the **underground workings.**

- (i) A copy of the documents, or
- (ii) An affidavit wherein the documents are described. For all documents or affidavits provided for the shadow area, the specific parcels are to be identified on the application map.

AFFIDAVIT

State of Ohio, Belmont County, ss. David L. Bartsch being first duly sworn, says that the following described documents convey to the applicant the legal right explained below and is a subject of litigation as shown below.

Type of Document LIMITED WARRANTY DEED

Execution Date 05/01/97

Expiration Date NONE

Parties: From CONSOL. LAND CO. to OVCC

Description of land: No. Acres _____

County Belmont

Township Smith

Sections 29

Lots _____

Parcel # 1-22-13, 14

Explanation of legal rights claimed See Addendum to Page 10, Part 1, C(8)(b),

Item 43

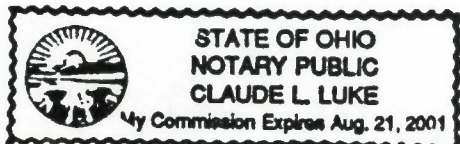
Pending litigation _____ yes X no.

David L. Bartsch
Signature of Affiant

01/27/98
Date

Environmental Coordinator and Permit Administrator
Position

Sworn before me and subscribed in my presence this 27 day of Jan., 19 98.



Claude L. Luke
Notary Public

ORIGINAL

APR 01 1998

D0360-7

TOVCC 21347

RIGHT OF ENTRY INFORMATION

C.(8)(B) Provide either of the following to allow for coal mining operations on the underground workings.

- (i) A copy of the documents, or
- (ii) An affidavit wherein the documents are described. For all documents or affidavits provided for the shadow area, the specific parcels are to be identified on the application map.

AFFIDAVIT

State of Ohio, Belmont County, ss. David L. Bartsch being first duly sworn, says that the following described documents convey to the applicant the legal right explained below and is a subject of litigation as shown below.

Type of Document LIMITED WARRANTY DEED

Execution Date 05/01/97

Expiration Date NONE

Parties: From CONSOL. LAND CO. to OVCC

Description of land: No. Acres _____

County Belmont

Township Smith

Sections 24

Lots _____

Parcel # 1-19-82

Explanation of legal rights claimed See Addendum to Page 10, Part 1, C(8)(b).

Item 44

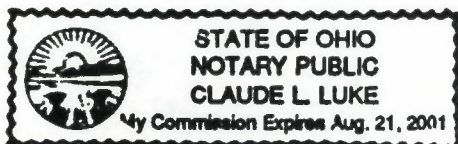
Pending litigation _____ yes X no.

David L. Bartsch
Signature of Affiant

01/27/98
Date

Environmental Coordinator and Permit Administrator
Position

Sworn before me and subscribed in my presence this 27 day of JAN., 1998.



Claude L. Luke
Notary Public

ORIGINAL

D0360-7

APR 01 1998

TOVCC 21348

RIGHT OF ENTRY INFORMATION

C.(8)(B) Provide either of the following to allow for coal mining operations on the underground workings.

- (i) A copy of the documents, or
- (ii) An affidavit wherein the documents are described. For all documents or affidavits provided for the shadow area, the specific parcels are to be identified on the application map.

AFFIDAVIT

State of Ohio, Belmont County, ss. David L. Bartsch being first duly sworn, says that the following described documents convey to the applicant the legal right explained below and is a subject of litigation as shown below.

Type of Document LEASE

Execution Date 09/26/95

Expiration Date 09/26/10

Parties: From CONSOLIDATION COAL to OVCC

Description of land: No. Acres _____

County Belmont

Township Smith

Sections 24

Lots _____

Parcel # C-1

Explanation of legal rights claimed See Addendum to Page 10, Part 1, C(8)(b),

Item 45

Pending litigation _____ yes X no.

David L. Bartsch

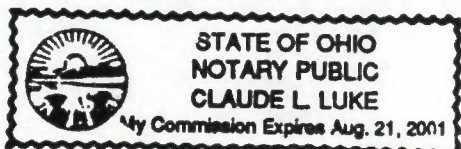
Signature of Affiant

01/27/98

Date

Environmental Coordinator and Permit Administrator
Position

Sworn before me and subscribed in my presence this 27 day of JAN., 1998.



Claude L. Luke
Notary Public

ORIGINAL

APR 01 1998

D0360-7

TOVCC 21349

RIGHT OF ENTRY INFORMATION

C.(8)(B) Provide either of the following to allow for coal mining operations on the underground workings.

- (i) A copy of the documents, or
- (ii) An affidavit wherein the documents are described. For all documents or affidavits provided for the shadow area, the specific parcels are to be identified on the application map.

AFFIDAVIT

State of Ohio, Belmont County, ss. David L. Bartsch being first duly sworn, says that the following described documents convey to the applicant the legal right explained below and is a subject of litigation as shown below.

Type of Document

LIMITED WARRANTY DEEDExecution Date 05/01/97Expiration Date NONEParties: From CONSOL. LAND CO. to OVCC

Description of land: No. Acres _____

County BelmontTownship SmithSections 36

Lots _____

Parcel # 1-22-62Explanation of legal rights claimed See Addendum to Page 10, Part 1, C(8)(b),Item 46Pending litigation _____ yes X no.

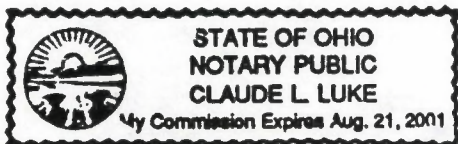
David L. Bartsch
Signature of Affiant

01/27/98

Date

Environmental Coordinator and Permit Administrator
Position

Sworn before me and subscribed in my presence this 27 day of JAN., 1998.



Claude L. Luke
Notary Public

ORIGINAL

APR 01 1998

D0360-7

RIGHT OF ENTRY INFORMATION

C.(8)(B) Provide either of the following to allow for coal mining operations on the underground workings.

- (i) A copy of the documents, or
- (ii) An affidavit wherein the documents are described. For all documents or affidavits provided for the shadow area, the specific parcels are to be identified on the application map.

AFFIDAVIT

State of Ohio, Belmont County, ss. David L. Bartsch being first duly sworn, says that the following described documents convey to the applicant the legal right explained below and is a subject of litigation as shown below.

Type of Document

WARRANTY DEEDExecution Date 12/29/70Expiration Date NONEParties: From N. AMER. COAL CORP. to OVCC (FORMERLY NACCO MINING CO)

Description of land: No. Acres _____

County BelmontTownship SmithSections 28

Lots _____

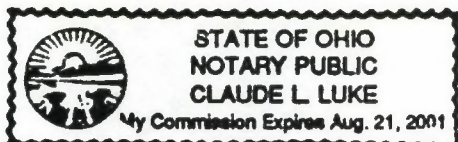
Parcel # 103Explanation of legal rights claimed See Addendum to Page 10, Part 1, C(8)(b).Item 47Pending litigation _____ yes X no.

David L. Bartsch
Signature of Affiant

01/27/98
Date

Environmental Coordinator and Permit Administrator
Position

Sworn before me and subscribed in my presence this 27 day of Jan., 19 98.



Claude L. Luke
Notary Public

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APR 01 1998

D0360-7

TOVCC 21351

RIGHT OF ENTRY INFORMATION

C.(8)(B) Provide either of the following to allow for coal mining operations on the underground workings.

- (i) A copy of the documents, or
- (ii) An affidavit wherein the documents are described. For all documents or affidavits provided for the shadow area, the specific parcels are to be identified on the application map.

AFFIDAVIT

State of Ohio, Belmont County, ss. David L. Bartsch being first duly sworn, says that the following described documents convey to the applicant the legal right explained below and is a subject of litigation as shown below.

Type of Document 0.00

Execution Date 0.00

Expiration Date 0.00

Parties: From 0.00 to 0.00

Description of land: No. Acres _____

County Belmont Township Smith

Sections 0.00 Lots _____

Parcel # 0.00

Explanation of legal rights claimed See Addendum to Page 10, Part 1, C(8)(b),

Item 0.00

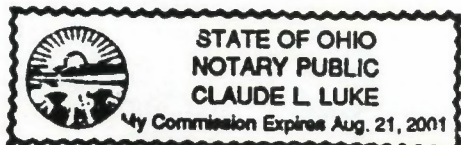
Pending litigation yes X no.

David L. Bartsch
Signature of Affiant

01/27/98
Date

Environmental Coordinator and Permit Administrator
Position

Sworn before me and subscribed in my presence this 27 day of Nov., 19 98.



Claude L. Luke
Notary Public

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APR 01 1998

00360-7

C. (9)(a) List below the following information for each surface owner of land within the proposed permit area.

N/A No Permit Area

[illegible]

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C. (9)(b) List below the following information for each surface owner of land within the proposed underground workings.

OWNER NAME	COUNTY	TOWNSHIP	SEC./LOT	T-	R-
R. BARRICKLOW	BELMONT	SMITH	35/36	6N	4W
S. Central Power Co, formerly THE BELMONT ELECTRIC CORP.	BELMONT	SMITH	35	6N	4W
C.A. BLAKE	BELMONT	SMITH	35	6N	4W
C. & C. BLAKE	BELMONT	SMITH	29	6N	4W
J.L. JR. BLAKE	BELMONT	SMITH	35	6N	4W
J.L. & I.D. BLAKE	BELMONT	SMITH	35	6N	4W
BOROUGH COMPANY	BELMONT	SMITH	23	6N	4W
BOROUGH COMPANY, ETAL	BELMONT	SMITH	22	6N	4W
F.N. & T.M. CARNAHAN	BELMONT	SMITH	29	6N	4W
T.A. & M.B. COYNE	BELMONT	SMITH	28/29	6N	4W
T.K. & J.C. COYNE	BELMONT	SMITH	29	6N	4W
R.N. & F.K. DELANEY	BELMONT	SMITH	22	6N	4W
A. FUNKHOUSER	BELMONT	SMITH	22/28	6N	4W
C.E. & I FUNKHOUSER	BELMONT	SMITH	28	6N	4W
C.E. JR. & C. FUNKHOUSER	BELMONT	SMITH	28	6N	4W
F.P. & A. FUNKHOUSER	BELMONT	SMITH	22	6N	4W
R.L. & M.J. GROVER	BELMONT	SMITH	29	6N	4W
F.T. HART	BELMONT	SMITH	28	6N	4W
R.L. HAYES	BELMONT	SMITH	22	6N	4W
F. & W.L. HORVATH	BELMONT	SMITH	29/35	6N	4W
M. L. & E.S. HUGHES	BELMONT	SMITH	30	6N	4W

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<u>EM & I</u>	<u>JOHNSON</u>	<u>BELMONT</u>	<u>SMITH</u>	<u>36</u>	<u>6N</u>	<u>4W</u>
<u>J & CF</u>	<u>KEMP</u>	<u>BELMONT</u>	<u>SMITH</u>	<u>35</u>	<u>6N</u>	<u>4W</u>
<u>R.E. & B.J.</u>	<u>KEMP</u>	<u>BELMONT</u>	<u>SMITH</u>	<u>35</u>	<u>6N</u>	<u>4W</u>
<u>D.M.</u>	<u>KINDLER</u>	<u>BELMONT</u>	<u>SMITH</u>	<u>23/29</u>	<u>6N</u>	<u>4W</u>
<u>R.M.</u>	<u>MILHOAN</u>	<u>BELMONT</u>	<u>SMITH</u>	<u>35/36</u>	<u>6N</u>	<u>4W</u>
<u>J.S.</u>	<u>MITCHELL</u>	<u>BELMONT</u>	<u>SMITH</u>	<u>29/30</u>	<u>6N</u>	<u>4W</u>
<u>A.T.</u>	<u>NIXON</u>	<u>BELMONT</u>	<u>SMITH</u>	<u>24</u>	<u>6N</u>	<u>4W</u>
<u>C.A. & M.A.</u>	<u>PICKENS</u>	<u>BELMONT</u>	<u>SMITH</u>	<u>29</u>	<u>6N</u>	<u>4W</u>
<u>C. & S.</u>	<u>POWELL</u>	<u>BELMONT</u>	<u>SMITH</u>	<u>35</u>	<u>6N</u>	<u>4W</u>
<u>J.L. JR. & T.A.</u>	<u>REESE</u>	<u>BELMONT</u>	<u>SMITH</u>	<u>24</u>	<u>6N</u>	<u>4W</u>
<u>R.S.</u>	<u>RICE</u>	<u>BELMONT</u>	<u>SMITH</u>	<u>22</u>	<u>6N</u>	<u>4W</u>
<u>T.N. & E.M.</u>	<u>RUBEL</u>	<u>BELMONT</u>	<u>SMITH</u>	<u>28</u>	<u>6N</u>	<u>4W</u>
<u>R & F COAL COMPANY</u>		<u>BELMONT</u>	<u>SMITH</u>	<u>24/30</u>	<u>6N</u>	<u>4W</u>
<u>R. SR. & J.</u>	<u>SAFFELL</u>	<u>BELMONT</u>	<u>SMITH</u>	<u>28</u>	<u>6N</u>	<u>4W</u>
<u>M.E. & T.</u>	<u>SEACREST</u>	<u>BELMONT</u>	<u>SMITH</u>	<u>35</u>	<u>6N</u>	<u>4W</u>
<u>F.</u>	<u>SIMPSON</u>	<u>BELMONT</u>	<u>SMITH</u>	<u>34/35</u>	<u>6N</u>	<u>4W</u>
<u>S. ETAL</u>	<u>SIMPSON</u>	<u>BELMONT</u>	<u>SMITH</u>	<u>34</u>	<u>6N</u>	<u>4W</u>
<u>F. & S.</u>	<u>SIMPSON</u>	<u>BELMONT</u>	<u>SMITH</u>	<u>34/35</u>	<u>6N</u>	<u>4W</u>
<u>O. JR. & B.</u>	<u>SIMPSON</u>	<u>BELMONT</u>	<u>SMITH</u>	<u>36</u>	<u>6N</u>	<u>4W</u>
<u>A.A.</u>	<u>SMITH</u>	<u>BELMONT</u>	<u>SMITH</u>	<u>35</u>	<u>6N</u>	<u>4W</u>
<u>J.D. ETAL</u>	<u>STANFORD</u>	<u>BELMONT</u>	<u>SMITH</u>	<u>35</u>	<u>6N</u>	<u>4W</u>
<u>J.L. & M.L.</u>	<u>THOMAS</u>	<u>BELMONT</u>	<u>SMITH</u>	<u>22</u>	<u>6N</u>	<u>4W</u>
<u>D. ETAL</u>	<u>THORNBURG</u>	<u>BELMONT</u>	<u>SMITH</u>	<u>29/30</u>	<u>6N</u>	<u>4W</u>
<u>THE BOARD OF TOWNSHIP TRUSTEES</u>		<u>BELMONT</u>	<u>SMITH</u>	<u>35</u>	<u>6N</u>	<u>4W</u>
<u>R.W. ETAL</u>	<u>WINLAND</u>	<u>BELMONT</u>	<u>SMITH</u>	<u>29</u>	<u>6N</u>	<u>4W</u>

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D. AREAS WHERE MINING IS PROHIBITED OR LIMITED-Permit Area

- (1) Does the permit area included in this permit application include any area dedicated as a nature preserve pursuant to Chapter 1517., Ohio Revised Code? Yes, No. If "yes," submit proof of valid existing right. N/A No Permit Area
- (2) Does the permit area included in this permit application include any area within one thousand feet of the waterlines of any wild, scenic, or recreational river dedicated pursuant to Chapter 1501., Ohio Revised Code? Yes, No. If "yes," submit proof of valid existing right. N/A No Permit Area
- (3) Does the permit area included in this permit application include any area within the boundaries of the following systems: national park, national wildlife refuge, national trails, national wilderness preservation, national recreational areas, or wild and scenic rivers or river corridors, including those rivers under study? Yes, No. If "yes," submit proof of valid existing right. N/A No Permit Area
- (4) Does the permit area included in this permit application include any federal lands within the boundaries of any national forest? Yes, No. If "yes," submit approval of the U.S. Secretary of Interior of proof of valid existing right. N/A No Permit Area
- (5) Will operations in the permit area conducted under this permit adversely affect any publicly owned park or places included on the National Register of Historic Places? Yes, No. If "yes," submit joint approval from the chief and the federal, state, or local agency with jurisdiction over the park or places or proof of valid existing right. N/A No Permit Area
- (6) Will operations in the permit area conducted under this permit affect land within one hundred feet of the outside right-of-way of a public highway? Yes, No. If "yes," list the highway(s) in the space below and submit Attachment 9 or proof of valid existing right. N/A No Permit Area

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- D. (7) Will operations in the permit area conducted under this permit affect land within three hundred feet of any occupied dwelling? Yes, No. If "yes," list the name of the owner(s) in the space below and submit Attachment 10 or proof of valid existing right.

N/A No Permit Area

- (8) Will operations in the permit area conducted under this permit affect land within three hundred feet of any public building, school, church, community or institutional building, or public park?
 Yes, No. If "yes," submit proof of valid existing right.

N/A No Permit Area

- (9) Will operations in the permit area conducted under this permit affect land within one hundred feet of a cemetery? Yes, No. If "yes," submit proof of valid existing right or appropriate authorization to relocate the cemetery.

N/A No Permit Area

- (10) Will operations conducted during this permit result in the extension of any part of the pit within fifty feet of horizontal distance to any adjacent land or water in which the applicant does not own either the surface or mineral rights? Yes, No. If "yes," list below the name(s) of the adjacent owner(s) and submit Attachment 11.

N/A No Permit Area

E. AREAS WHERE MINING IS PROHIBITED OR LIMITED-Permit and Shadow Area

Are there areas within the proposed permit area, shadow area, or adjacent areas designated unsuitable for coal mining operations under rule 1501:13-3-07 of the Administrative Code or under study for designation in an administrative proceeding under this rule?

 Yes, X No.

- (1) If "yes" to the item above, did the applicant make substantial legal and financial commitments in the proposed areas prior to January 4, 1977?

 Yes, No.

N/A

- (2) If "yes" to item (1) above, submit as an addendum to the permit application information supporting the assertions that the commitments were made prior to January 4, 1977.

N/A

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F. PERMIT TERM AND EXTENT-Permit and Underground Workings

- (1) Anticipated/actual date for:
 - (a) Starting mining operations 1/1/99
 - (b) Terminating mining operations N/A
- (2) Does the applicant propose a permit term in excess of five (5) years? Yes, X No. If "yes," submit an addendum with the information required by 1501:13-4-03(E)(3), Ohio Administrative Code.
- (3) Indicate the following acreage figures:
 - (a) Total Acres 0 (Permit area)
 - (b) Total Acres 2650 (Underground Workings)
- (4) Horizontal extent of underground workings over life of permit in acres:
 - (a) Full Coal Recovery 2650
 - (b) Room and Pillar 0

G. PUBLIC NOTICE-Permit and Shadow Area

- (1) In the space below, provide the name and address of the public office where a complete copy of this permit application is to be filed.

Recorder's Office
Belmont County Court House
Main Street
St. Clairsville, Ohio 43950

- (2) In the space below, list the name and address of the newspaper and submit an addendum providing the text of the advertisement that is to be published in a newspaper of general circulation in the locality of the proposed operation. Note: The advertisement is to provide the information required by paragraph (A) of rule 1501:13-5-01 of the Administrative Code.

The Times Leader
200 South Fourth Street
Martins Ferry, Ohio 43935

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PART 2 ENVIRONMENTAL RESOURCES INFORMATION

A. CULTURAL, HISTORIC, AND ARCHEOLOGICAL INFORMATION-Permit and Planned Subsidence Area

- (1) Are there any cultural or historic resources or structures listed or eligible for listing on the National Register of Historic Places within the proposed permit or planned subsidence area?
X Yes, No. If "yes," submit an addendum describing the resources and structures including the location and submit Attachment 27 or 27A as appropriate. See Attachment 27A.
- (2) Are there any known archeological sites within the proposed permit or planned subsidence area?
 Yes, X No. If "yes," submit an addendum describing the site including the location and submit Attachment 27 or 27A as appropriate.
- (3) If applicable, based upon the review of the proposed planned subsidence areas and the completed Attachment 27A for the initial six months of projected mining, have any properties listed or eligible for listing on the National Register of Historic Places been identified? Yes, X No. If "yes," submit an addendum listing each property identified.
- (4) Submit an addendum indicating the method to be used to identify historic properties on planned subsidence areas as mining progresses. See Addendum to Page 16, Part 2, A(4)

B. GEOLOGY DESCRIPTION-Permit and Shadow Area

- (1) Submit an addendum describing the geology within the proposed permit area and shadow area down to and including the first stratum below the lowest coal seam to be mined or any aquifer below the lowest coal seam to be mined which may be adversely affected by mining. The description shall also include information on the areal and structural geology of the permit and shadow area and any other geologic parameters which may influence the probable hydrologic consequences and protection of the hydrologic balance from material damage outside of the permit area.
See Addendum to Page 16, Part 2, B.(1)
- (2) Submit an addendum describing how the areal and structural geology may affect the occurrence, availability, movement, quantity, and quality of potentially affected surface and ground waters per paragraph (C) of rule 1501:13-4-13 of the Administrative Code.

See Addendum to Page 16, Part 2, B (2)

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- B. (3) For those areas to be affected by underground mining surface operations where removal of the overburden down to the level of the coal seam will occur, submit Attachment 12(s) as required by paragraphs (C)(2)(a) and (c) of rule 1501:13-4-13 of the Administrative Code. N/A
- (4) For those areas within the shadow area where the stratum above the coal seam to be mined will not be removed, submit Attachment 13(s) as required by paragraphs (C)(2)(d) and (e) of rule 1501:13-4-13 of the Administrative Code. See Attachment 13's

C. GROUND WATER INFORMATION-Permit, Shadow Area, and Adjacent Area

- (1) Submit an Attachment 14B which describes the ground water hydrology of the proposed permit area, shadow area, and adjacent area. The Attachment 14B is to include information on each waterbearing stratum or zone as required by paragraph (D) of rule 1501:13-4-13 of the Administrative Code, including the first waterbearing stratum below the coal to be mined.
See Attachment 14B
- (2) Are there any wells on the proposed permit area, shadow area, and adjacent area? X Yes, _____ No. If "yes," submit Attachment 14C.
See Attachment 14C
- (3) Are there any springs on the proposed permit area, or developed springs on the shadow area and adjacent area? X Yes, _____ No. If "yes," submit Attachment 14C.
See Attachment 14C
- (4) Are there any public water supply sources on the proposed permit area, shadow area, and adjacent area? _____ Yes, X No. If "yes," submit Attachment 14A, Attachment 14D, and show location on the hydrology map.
See Attachment 14D and Hydrology Map
- (5) Submit Attachment 14A for representative wells and developed springs as required by paragraph (D)(4) of rule 1501:13-4-13. Based on this data identify the seasonal variations of ground water quality and quantity. See Attachment 14A and Addenda

D. SURFACE WATER INFORMATION-Permit, Shadow Area, and Adjacent Area

- (1) List the name of the watershed that will receive water discharges from the proposed permit, shadow, and adjacent areas as listed in the "Gazetteer of Ohio Streams" published by the Ohio Department of Natural Resources. McMahon Creek , Captina Creek
- (2) Are there any perennial or intermittent streams or other surface water bodies on the proposed permit, shadow area, and adjacent area? X Yes, _____ No. If "yes," submit Attachment 14A and Attachment 14D and show location on application and hydrology map.
See Attachments 14A, 14D and Hydrology Map.

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- D. (3) Based on the data listed on Attachment 14A, and other information submitted with this application, identify the seasonal variations in water quality and quantity for the streams identified in Part 2, D(2).

See Attachment 14A, Addenda, PHC

E. HYDROLOGIC DETERMINATION-Permit, Shadow Area, and Adjacent Area

Based on the information submitted in response to items B, C, and D in this part of the permit application, submit an addendum describing the probable hydrologic consequences of this proposed underground mining operation on the hydrologic regime of the proposed permit area, shadow area, and adjacent area. The description shall include findings on each of the following items:

- (1) The consequences of the proposed operation on the contents of total suspended and dissolved solids, total iron, total manganese, acidity, and pH;

See Addendum to Page 18, Part 2, E

- (2) Whether adverse impacts may occur to the hydrologic balance; and

See Addendum to Page 18, Part 2, E

- (3) The impact the proposed operation will have on:

- (a) sediment yield from the disturbed area,
- (b) flooding and stream flow alteration or diminution,
- (c) ground water and surface water availability.

See Addendum to Page 18, Part 2, E

F. ALTERNATIVE WATER SUPPLY INFORMATION-Permit, Shadow Area, and Adjacent Area

- (1) Based on the response in Part 2, item E, submit an addendum identifying the extent to which the proposed coal mining activities may proximately result in contamination, diminution, or interruption of an underground or surface source of water within the proposed permit area, shadow area, and adjacent area that is used for domestic, agricultural, industrial, or other legitimate use. See Addendum to Page 18, Page 2, F

- (2) If contamination, diminution, or interruption may result, submit an addendum identifying the alternative sources of water supply that could be developed to replace the existing sources including information on water availability and suitability of alternative sources for existing pre-mining uses and postmining land use.

See Addendum to Page 18, Part 2, F

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G. LAND USE INFORMATION-Permit Area

- (1) Describe the uses of the land within the proposed permit area existing at the time of the filing of this permit application and provide a map which delineates the area of each land use.

N/A - No Permit Area

- (2) Was the land use described in item G(1) above changed within five years before the anticipated date of beginning this proposed mining operation?
_____ Yes, _____ No. If "yes," submit an addendum describing the historic use of the land.

N/A - No Permit Area

- (3) Analyze the capability of the land within the proposed permit area before any mining to support a variety of uses, giving consideration to soil and foundation characteristics, topography, vegetative cover, and hydrology of the proposed permit area.

N/A - No Permit Area

- (4) Analyze the productivity of the land within the proposed permit area before any mining to include average yields obtained under high level of management.

N/A - No Permit Area

- (5) Is any land within the proposed permit area classified as prime farmland? _____ Yes, _____ No.

N/A - No Permit Area

- (6) Submit an addendum describing the use of the land within the permit area, including the creation of permanent water impoundments, that is proposed to be made of the land following reclamation, including information regarding the utility and capacity of the reclaimed land to support a variety of alternative uses.

N/A - No Permit Area

- (7) Are there existing land use classifications under local law of the proposed permit area? _____ Yes, _____ No. If "yes," describe the land use classification and submit as an addendum to the permit application, the comments of the governmental agency which would have to initiate, implement, approve or authorize the proposed use of the land following reclamation. If "no," describe the sources of information on which the determination was made.

N/A - No Permit Area

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- G. (8) Submit as an addendum a copy of the comments from the legal or equitable owner of record of the surface of the proposed permit area concerning the proposed land use.
N/A - No Permit Area
- (9) Describe the consideration which has been given to making all of the proposed coal mining activities consistent with surface owner plans and applicable state and local land use plans and programs.
N/A - No Permit Area
- (10) Describe how the proposed land use is to be achieved and the necessary support activities that may be needed to achieve the proposed land use.
N/A - No Permit Area
- (11) Is the postmining land use to be different from the premining land use? _____ Yes, _____ No. If "yes," submit as an addendum to the permit application, the plans and findings required by paragraph (D) of rule 1501:13-9-17 of the Administrative Code.
N/A - No Permit Area
- (12) Has the proposed permit area been previously mined? _____ Yes, _____ No. If "yes," provide the following information, if available. N/A No Permit Area
- (a) Type of mining method _____
- (b) Coal seam mined _____
- (c) Non coal mineral mined _____
- (d) Extent of mining (acres) _____
- (e) Approximate dates _____
- (f) Land use preceding mining _____

H. PRIME FARMLAND INVESTIGATION-Permit Area

- (1) Does the proposed permit area include any land that is prime farmland, taking into consideration the negative determinations listed in paragraph (L)(2) of rule 1501:13-4-13 of the Administrative Code?
_____ Yes, _____ No. N/A No Permit Area
- (2) If the response to item H.(1) is "yes," submit Attachment 15.
- (3) If the response to item H.(1) is "no," submit Attachment 16.

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PART 3 RECLAMATION AND OPERATIONS PLAN

A. GENERAL REQUIREMENTS-Permit Area (Items A.(1) and A.(2)-
Permit and Underground Workings)

- (1) Submit an addendum describing the type and method of coal mining procedures for this application. Explain how these procedures will maximize the use and conservation of the coal resources. Recovery for the longwall areas is high. Room and Pillar areas will mine the maximum amount of coal and still provide for no subsidence.
- (2) Indicate the anticipated annual and total production of coal from this proposed operation.

Annual 5.0 million Total 25 million

- (3) Will this operation be combined with surface coal mining activities to the extent that contemporaneous reclamation of areas disturbed by surface mining will be delayed or such that the underground workings will be within 500 feet of the surface mining activities?
_____ Yes, _____ No. If "yes," submit Attachment 30.
N/A - No Permit Area
- (4) Are experimental mining practices to be employed in the proposed mining operations? _____ Yes, _____ No. If "yes," submit as an addendum to the permit application, the description, maps, and plans required by paragraph (B) of rule 1501:13-4-12 of the Administrative Code.
N/A - No Permit Area
- (5) Are mountaintop removal mining practices to be employed in the proposed mining operations? _____ Yes, _____ No. If "yes," submit as an addendum to the permit application the information required by paragraph (C) of rule 1501:13-4-12 of the Administrative Code.
N/A - No Permit Area
- (6) Are the natural pre-mining slopes within the permit area in excess of twenty (20) degrees?
_____ Yes, _____ No. If "yes," submit an addendum demonstrating compliance with the steep slope mining provisions of paragraph (D) of rule 1501:13-4-12 and 1501:13-13-05 of the Administrative Code.
N/A - No Permit Area
- (7) Is augering proposed within the permit area?
_____ Yes, _____ No. If "yes," submit Attachment 18.
N/A - No Permit Area
- (8) Are variances from approximate original contour to be employed for the proposed underground mining surface operations? _____ Yes, _____ No. If "yes," submit an addendum to the permit application demonstrating compliance with paragraph (E) and/or (K) of rule 1501:13-4-12 of the Administrative Code.

N/A - No Permit Area

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- A. (9) Will access to the underground workings be gained through a drift entry? _____ Yes, _____ No. If "yes," provide as an addendum sufficient information to determine the location of the entry relative to the highest elevation of the coal reserve. Is the drift entry located so as to eliminate the potential for a gravity discharge? _____ Yes, _____ No. If "no," the applicant must demonstrate that the coal seam is not acid or iron producing. Provide an analysis of the strata immediately above and below the coal, and the coal seam itself, sufficient to demonstrate that the water quality from the entry will meet effluent limitations without treatment.
N/A - No Permit Area
- (10) For entries to underground workings other than drift entries, provide as an addendum sufficient information to determine the location of the entry relative to the coal reserve. Are the entries located so as to eliminate the potential for a gravity discharge? _____ Yes, _____ No. If "no," provide the following demonstration: N/A - No Permit Area
- (a) the gravity discharge will meet effluent limitations without treatment, or
- (b) the water will be treated to meet effluent limitations and provisions will be made for consistent maintenance of the treatment facility throughout the anticipated period of gravity discharge.
- (11) Will the permanent entry seals be designed to withstand the maximum anticipated hydraulic head when the operations are abandoned? _____ Yes, _____ No. If "yes," submit the appropriate information demonstrating that this will be accomplished. If "no," provide a typical plan for the seals to be used to close the mine entries pursuant to applicable state and federal regulations.
N/A - No Permit Area
- (12) Submit an addendum describing the construction, modification, maintenance, and removal (unless to be retained for postmining land use), including the proposed engineering techniques and major equipment to be used, of the following facilities:
- (a) dams, embankments, and other impoundments. Do any of the plans for water, sediment or slurry impoundments meet the requirements of 30 CFR 77.216? _____ Yes, _____ No. If "yes," submit as an addendum a plan that addresses each of the requirements in 30 CFR 77.216-2.
- (b) overburden and topsoil handling and storage areas and structures.

N/A - No Permit Area

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- A. (12) (c) coal removal, handling, storage, cleaning, and transportation areas and structures; including, but not limited to, preparation plants, beltlines, tipples, rail sidings, and primary roads. For roads, conveyors and rail systems, submit an addendum describing the information required pursuant to paragraph (L) of rule 1501:13-4-14 and 1501:13-10-01 of the Administrative Code.
N/A - No Permit Area
- (d) spoil removal, handling, storage, transportation, and disposal areas and structures, including underground development waste or excess spoil disposal sites. If underground development waste or excess spoil is to be generated, submit an addendum describing the information required by paragraphs (O) and (P) of rule 1501:13-4-14 and 1501:13-9-07 of the Administrative Code.
N/A - No Permit Area
- (e) mine facilities such as portal/shaft development, boreholes, de-gas holes, vents, office or shop buildings and maintenance facilities.
N/A - No Permit Area
- (f) water and air pollution control facilities.
N/A - No Permit Area
- (13) Provide an estimate of the cost per acre to reclaim the permit area.
N/A - No Permit Area
- (14) Will the proposed operation include any of the following:
N/A - No Permit Area
- (a) disposal of coal mine waste from a wash plant, tipple, or other source? Yes, No. If "yes," submit Attachment 28 and, if applicable, the information required by paragraph (H) of rule 1501:13-4-14 of the Administrative Code.
- (b) disposal of fly ash or other noncoal wastes? Yes, No. If "yes," submit an addendum which addresses the disposal material and a detailed disposal plan, pursuant to paragraph (E) of rule 1501:13-9-09 of the Administrative Code.
- (c) return of slurry or other mine waste or material into the abandoned underground workings? Yes, No. If "yes," comply with provisions contained in paragraph (N) of rule 1501:13-4-14 and paragraph (Q) of 1501:13-9-04 of the Administrative Code, and submit copies of the required MSHA approvals as an addendum.

B. EXISTING STRUCTURES-Permit Area

- (1) Are any existing structures proposed to be used in connection with or to facilitate the coal mining and reclamation operation? Yes, No. If "yes," submit as an addendum to the permit application a description of each structure. The description shall include the information required by paragraph (B)(1) of rule 1501:13-4-14 of the Administrative Code.

N/A - No Permit Area

- B. (2) Are any existing structures proposed to be modified or reconstructed for use in connection with or to facilitate the coal mining and reclamation operation? _____ Yes, _____ No. If "yes," submit as an addendum to the permit application, a compliance plan for each structure. The plan shall include the information required by paragraph (B) (2) of rule 1501:13-4-14 of the Administrative Code.

N/A - No Permit Area

C. BLASTING-Permit Area

Will blasting occur within 25 feet of the surface during shaft and portal development or other on-site development? _____ Yes, _____ No. If "yes," submit Attachment 29.

N/A - No Permit Area

D. RECLAMATION PLAN - GENERAL REQUIREMENTS-Permit Area (Item D.(12)-Permit, Shadow, and Adjacent Area)

- (1) Provide a detailed timetable for the completion of backfilling and grading for each mining year.

N/A

- (2) Provide a detailed timetable for the completion of resoiling for each mining year.

N/A

- (3) Provide a detailed timetable for the completion of planting for each mining year.

N/A

- (4) Describe the plan for backfilling, compacting and grading of the disturbed permit area, including the disposal of all mine generated debris.

N/A

- (5) Submit an addendum describing the plan for the removal, storage, redistribution and stabilization of topsoil, subsoil, or approved alternative resoiling material to meet the requirements of rule 1501:13-9-03 of the Administrative Code. If an alternative resoiling material is to be used, submit Attachment 19.

N/A

- (6) Provide the following information for the revegetation plan:

- (a) Schedule for revegetation to include planting of temporary vegetation.

N/A

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- D. (6) (b) List the species and amounts per acre of seeds and seedlings to be used.

N/A

- (c) Describe the methods to be used in planting and seeding.

N/A

- (d) Describe the mulching techniques.

N/A

- (7) Describe the soil testing plan for evaluation of the results of topsoil handling and reclamation procedures related to revegetation.

N/A

- (8) Submit an addendum describing the measures to be employed to handle and place acid or toxic-forming materials in accordance with paragraph (J) of rule 1501:13-9-04 and paragraph (J) of rule 1501:13-9-14 of the Administrative Code. N/A

- (9) Describe the measures, including appropriate cross-sections and maps, to be used to plug, case or manage mine openings or bore holes other than those entries utilized to gain access to the underground workings, pursuant to rule 1501:13-9-02 of the Administrative Code.

N/A

- (10) Is the reclamation plan consistent with local physical, environmental, and climatological conditions?
_____ Yes, _____ No. N/A

- (11) Identify any other applicable air and water quality laws and regulations and health and safety standards and describe the steps to be taken to comply with each.

N/A

- (12) Submit an addendum describing the plan for minimizing to the extent possible and using the best technology currently available disturbances and adverse impacts of the operation on fish and wildlife and related environmental values and achieving enhancement of such resources where practical for the permit, shadow, and adjacent areas.

See Addendum to Page 25, Part 3, D(12)

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E. RECLAMATION PLAN-PROTECTION OF HYDROLOGIC BALANCE-Permit and Adjacent Area

Submit an addendum describing the measures to be taken during and after the proposed mining operations to:

See Addendum to Page 26, Part 3E (1-3)

- (1) minimize disturbance to the hydrologic balance, including quality and quantity, within the permit and adjacent areas and to prevent material damage outside the permit area;
- (2) protect the rights of present users of surface and ground water;
- (3) avoid acid or toxic drainage.

F. GROUND WATER AND SURFACE WATER MONITORING PLAN-Permit and Shadow Area

Based upon the probable hydrologic consequences determination and analysis of all baseline hydrologic, geologic, and other information submitted in this application, address the following items in accordance with paragraph (F) of rule 1501:13-4-14 and paragraph (N) of rule 1501:13-9-04 of the Administrative Code.

See Addendum to Page 29, Part 3, F

- (1) In addition to the quality and quantity parameters required for quarterly monitoring and NPDES monitoring, will any other parameters be monitored?
_____ Yes, X No. If "yes," indicate the parameter(s) and the site(s) where such monitoring will occur.
- (2) Do you propose or anticipate the need for a variation in the required monitoring frequency for ground and surface water sites and monthly monitoring for NPDES?
_____ Yes, X No. If "yes," describe the variation in frequency and the monitoring sites to be affected.
- (3) Describe the plan for collection, recording, and reporting of all surface and ground water quality and quantity monitoring data, including data collected for the NPDES program.

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G. DIVERSIONS AND DRAINAGE CONTROLS-Permit Area

- (1) Will the proposed coal mining activities result in diversions of overland flow away from the disturbed areas? _____ Yes, _____ No. If "yes," describe, including maps and cross sections, the diversion to be constructed to achieve compliance with paragraph (I) of rule 1501:13-4-14 of the Administrative Code.

N/A - No Permit Area

- (2) Will the proposed coal mining activities result in the diversion of intermittent or perennial streams within the proposed permit area? _____ Yes, _____ No. If "yes," describe, including maps and cross sections, the diversions to be constructed to achieve compliance with paragraph (I) of rule 1501:13-4-14 of the Administrative Code.

N/A - No Permit Area

- (3) Will the proposed coal mining activities result in construction of diversions to direct runoff through a sediment pond or a series of sediment ponds? _____ Yes, _____ No. If "yes," submit an addendum to describe, including maps and cross sections, the diversions to be constructed to achieve compliance with paragraph (I) of rule 1501:13-4-14 of the Administrative Code.

N/A - No Permit Area

- (4) Indicate which of the following are proposed to be constructed within the proposed permit area and submit as an addendum the detailed design plans for each structure in accordance with paragraph (H) of rule 1501:13-4-14 and 1501:13-9-04 of the Administrative Code.

_____ sedimentation pond(s) (submit Attachment 20)

_____ water impoundment(s) (submit Attachment 20)

_____ other (specify) _____

N/A - No Permit Area

- (5) Submit an addendum describing the plan for the control of water drainage into, through, and out of the proposed permit area. If applicable, submit as an addendum any request for variances pursuant to paragraphs (B) and (E) of rule 1501:13-9-04 of the Administrative Code.

N/A - No Permit Area

- (6) Describe the treatment, when required, of ground and surface water drainage from the area to be disturbed by the proposed coal mining activities

N/A - No Permit Area

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H. PROTECTION OF PUBLIC PARKS AND HISTORIC PLACES-Permit and Planned Subsidence Area

Will the proposed coal mining activities adversely affect any public parks and places listed on the National Register of Historic Places? _____ Yes, X No. If "yes," submit an addendum describing the measures to minimize or prevent these impacts.

I. MINING NEAR OR THROUGH A PUBLIC ROAD-Permit Area

If the response to Part 1, item D(6) of the permit application is "yes," submit an addendum describing the measures to be used to ensure that the interests of the public and landowners are protected.

N/A - No Permit Area

J. SUBSIDENCE CONTROL SURVEY-Shadow Area

- (1) Is this a full coal recovery operation?
X Yes, _____ No. If "yes," complete Attachment 31, Subsidence Control Survey, and following items J(2) and (3). See Attachment 31
- (2) Does the shadow area contain any of the structures or facilities listed in 1501:13-12-03(J)(1-3)?
_____ Yes, X No. If "yes," complete Attachment 32, Protection of Specific Structures, and specifically identify the structures or facilities on the application map.
- (3) Are any aquifers or bodies of water that serve as a significant water source for any public water supply system present in the shadow area?
_____ Yes, X No. If "yes," complete Attachment 32, Protection of Specific Structures, and specifically identify the areas on the application map.

K. SUBSIDENCE CONTROL PLAN-Shadow Area

- (1) Submit an addendum which describes the method of coal removal, and indicates the size, sequence, and timing of the development of the underground workings.
See Addendum to Page 28, Part 3, K(1)/Timing, Struc. Cont., and Parcel Map
- (2) Utilizing the application map, specifically indicate areas where planned subsidence mining methods (i.e. longwall or pillar extraction) will be used.
See Application Map and Timing, Struc. Cont., and Parcel Map.
- (3) Utilizing the application map, specifically indicate room-and-pillar mining areas where subsidence will be prevented or minimized.
See Application Map and Timing, Struc. Cont., and Parcel Map.

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- K. (4) Submit as an addendum, for those areas mapped as room-and-pillar mining, the following information:

There are no room-and-pillar areas planned

- (a) the maximum and average overburden thickness.
- (b) the projected maximum extraction ratios for mains, submains, and butt sections, as well as the existing ranges of values for the same areas.
- (c) projected maximum width of entries and cross cuts throughout the mine, as well as the existing ranges of values for the same areas.
- (d) the center spacing for entries and cross cuts.
- (e) minimum pillar dimensions for mains, submains, and butt sections, as well as the existing ranges of values for these areas.
- (f) the barrier pillar width between butt sections, as well as the existing ranges of values for the same areas.
- (g) the engineering properties of the clay/shale, or other soft rock material in the roof and floor of the mine.
- (h) measures to be taken on the surface to prevent damage or lessening of the value or reasonably foreseeable use of the surface, if any.
- (i) the minimum pillar safety factor, for protected structures, based upon coal strength and load.
- (j) methods and calculations used to determine the safety factor.

- (5) Submit as an addendum for those areas mapped as full coal recovery mining, the following information:

See Addendum to Page 29, Part 3, K(5)(a).

- (a) for each method to be employed (i.e. longwall or pillar extraction), provide the following:
 - i) rate and direction of dip for the coal seam.
 - ii) dimensions of panels or butt sections.
 - iii) thickness of coal to be extracted (mining height).
 - iv) maximum angle of draw.
 - v) maximum anticipated subsidence.
 - vi) width of barrier pillars or chain pillars between sections or panels.
 - vii) the maximum extraction ratio within a pillaring section.

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- K. (5) (b) the anticipated effects of planned subsidence upon the land and water resources identified in the subsidence control survey and survey of ground and surface water resources.
See Addendum to Page 30, Part 3, K(5)(b) and Attachment 31
- (c) the measures to be taken to mitigate the anticipated effects of planned subsidence to the land and water resources.
See Addendum to Page 30, Part 3, K(5)(c)
- (d) the anticipated effects of planned subsidence upon the structures identified in the subsidence control survey.
See Addendum to Page 30, Part 3, K(5)(d)
- (e) the proposed measures to be taken to mitigate anticipated effects to structures.
See Addendum to Page 30, Part 3, K(5)(e)
- (f) the proposed measures to determine the extent of mining related damages including a presubsidence survey with an indication of the timing of the survey.
See Addendum to Page 30, Part 3, K(5)(f)
- (g) the provisions for repair and/or compensation for damages to structures.
See Addendum to Page 30, Part 3, K(5)(g)
- (h) describe the monitoring, if any, needed to determine the commencement and degree of subsidence so that, when appropriate, other measures can be taken to prevent, reduce, or correct material damage in accordance with rule 1501:13-12-03 of the Administrative Code.
See Addendum to Page 30, Part 3, K(5)(h)
- (6) Will planned subsidence operations be conducted within the angle of draw of urbanized areas, cities, towns, communities, industrial or commercial buildings, major impoundments, or perennial streams?
_____ Yes, X No. If "yes," describe any measures or activities that will prevent a condition or practice that could result in an imminent danger to the health or safety of the public.
- (7) Will planned subsidence operations be conducted within the angle of draw of transmission pipelines?
X Yes, _____ No. If "yes," describe the procedural plan to avoid the creation of a situation of imminent danger to the health and safety of the public.

See Addendum to Page 30, Part 3, K(7)

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PART 4 FORMAT AND CONTENT

A. FILING OF ADDENDA

If an addendum is needed to present the information required by the items in the permit application, the addendum is to be submitted with the permit application and each page, map, plan or other document in the addendum should include the applicant's name and indicate to what item the addendum applies. For example, "Addendum to Part 3, item K(2) Zebco Coal Company."

B. Provide the information requested below for all technical data submitted in the application.

Identification of Technical Data (1)	Person/Organization that Collected Data and Date	Methodology for Collecting Data	Person/Organization that Collected Data and Date	Methodology Used to Analyze Data
Attachments, Addenda	D. Bartsch (OVCC)	N/A	Quality Environmental Services, Tra-Det, Inc.	Water Sampling Lab Analysis Field Analysis

- (1) The technical data is to be identified by referencing the particular item in the application for which the data was used in preparing the response (e.g. Part 2, B(1); Attachment 14; Part 4, A).

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C. Provide the name, address, and position of officials of each private or academic research organization or governmental agency contacted in the preparation of the application for information on land uses, soils, geology, vegetation, fish and wildlife, water quantity and quality, air quality, and archeological, cultural, and historic features.

Name and Address of Official	Position of Official	Name of Agency/ Organization	Type of information (e.g. Geology)
Bill Haiker	Hydrologist	ODNR, Division of Water	Ground Water Inventory Report
No contact person - Public Document		USGS	Water Resources Data

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D. APPLICATION FOR ABANDONED MINED LAND DIRECT NEGOTIATED CONTRACT
(IF APPLICABLE)

In accordance with Section 1513.27 of the Ohio Revised Code, the chief of the Division of Reclamation has been granted the authority to enter into contracts with licensed operators for reclamation of abandoned mined lands affected by coal mining prior to April 10, 1972 and located adjacent to a permit area. To be eligible for reclamation funding, the abandoned mined land must be causing offsite environmental problems, will not be affected by the operator during the normal course of mining, and is not likely to be mined in the foreseeable future. If such lands exist adjacent to your permit area and you are interested in contracting for reclamation of the lands, complete this application, detach and send directly to:

Robert S. Baker, Manager
Mined Land Reclamation
Division of Reclamation
Fountain Square, H-2
Columbus, Ohio 43224

Upon receipt, a representative from the Mined Land Reclamation section will contact you.

Applicant: _____

Address: _____

City: _____ State: _____ Zip: _____

Business Telephone: _____

Contact Person: _____

Description of Abandoned Mined Land:

County: _____

Township: _____

Section/Lot: _____

Approximate Acreage _____

Environmental Problems Associated with Site:

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ADDENDUM TO PAGE 7, C(1)(b)
THE OHIO VALLEY COAL COMPANY
POWHATAN NO. 6 MINE
PERMIT D-0360

The Ohio Valley Coal Company owns or leases the Pittsburgh (No. 8) coal seam in this application area. The surface owners generally own the other mineral rights, unless otherwise indicated.

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ADDENDUM TO PAGE 8, PART 1, C(2)
THE OHIO VALLEY COAL COMPANY
POWHATAN NO. 6 MINE
PERMIT D-0360

Other leasehold interests:

Consolidated Land Company
Box 505
34208 Aurora Road
Solon, Ohio 44139
Coal

Consolidation Coal Company
1800 Washington Road
Pittsburgh, PA 15241
Coal

South Central Power Company
c/o R. Dane Swinehart
2780 Coon Path Road
Lancaster, Ohio 43130
SURFACE

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ADDENDUM TO PAGE 10, PART 1, C(8)(b)
THE OHIO VALLEY COAL COMPANY
POWHATAN NO. 6 MINE
PERMIT D-0360

The following items describe the deed rights claimed by The Ohio Valley Coal Company for the Pittsburgh (No. 8) Coal Seam:

Item 1 - Deed Rights to Tract 1-18-94

TOGETHER with the free, uninterrupted use and enjoyment of right of way, into, upon and under said lands at such points and in such manner as may be considered proper and necessary for the advantageous and economical operation thereof, and in the digging and mining of said coal and draining and ventilating of the mines and without liability therefor, and hereby waiving any and all damages that might or could arise therefrom by reason of such digging, mining, draining and ventilating and carrying away all of said coal or the manufacture of the said coal or other coal into coke or other by-products, together with the privilege of carrying or transferring and removing through the described premises this and other coal and mine supplies now owned or hereafter acquired by said grantee, its successors and assigns, generally freed, clear and discharged of any servitude whatever to the overlying land or anything therein or thereon

Item 2 - Deed Rights to Tract 1-19-34

Together with the free and uninterrupted right of way into, upon and under said land, at such points and in such manner as may be proper and necessary for the purpose of digging, mining, draining, and ventilating, and carrying away said coal, (hereby waiving all surface damages, or damages of any sort, arising therefrom, or from the removal of all of said coal), together with the privilege of mining and removing through said described premises, other coal belonging to said Grantee, his heirs and assigns, or which may hereafter be acquired.

Item 3 - Deed Rights to Tract 1-19-58

Party of the Second Part are to have the free and uninterrupted right of way into, upon and under said land, at such points, and in such manner as may be proper and necessary for the purpose of digging, mining, draining and ventilating and carrying away said coal, (hereby waiving all surface damages, or damages of any sort arising therefrom or from the removal of all of said coal), together with the privilege of mining and removing through said described premises, other coal belonging to said party of the second part, his heirs and assigns, or which may hereafter be acquired.

Item 4 - Deed Rights to Tract 1-22-7

Party of second part to have the free and uninterrupted right of way into, upon and under said land, at such points, and in such manner as may be proper and necessary for the purpose of digging, mining, draining and ventilating, and carrying away said coal (hereby waiving all surface damages, or damages of any sort, arising therefrom, or from the removal of all of said coal), together with the

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privilege of mining and removing through said described premises other coal belonging to said party of the second part, its successors, heirs and assigns, or which may hereafter be acquired.

Item 5 - Deed Rights to Tract 1-22-8

Party of second part to have the free and uninterrupted right of way into, upon and under said land, at such points, and in such manner as may be proper and necessary for the purpose of digging, mining, draining and ventilating, and carrying away said coal (hereby waiving all surface damages, or damages of any sort, arising therefrom, or from the removal of all of said coal), together with the privilege of mining and removing through said described premises other coal belonging to said party of the second part, its successors, heirs and assigns, or which may hereafter be acquired.

Item 6 - Deed Rights to Tract 1-22-9

Party of second part to have the free and uninterrupted right of way into, upon and under said land at such points and in such manner as may be proper and necessary for the purpose of digging, mining, draining and ventilating, and carrying away said coal, (hereby waiving all surface damages, or damages of any sort, arising therefrom, or from the removal of all of said coal), together with the privilege of mining and removing through said described premises other coal belonging to said party of the second part, its successors and assigns, or which may hereafter be acquired.

Item 7 - Deed Rights to Tract 1-22-10

Together with the free and uninterrupted right of way into, on and under said land at such points and in such manner as may be proper and necessary for the purpose of digging, mining, draining and ventilating by air shafts and otherwise and of carrying away the coal, together with the privilege of mining and removing through the above described premises other coal belonging to the Grantee, its successors or assigns, or which may hereafter be acquired; together with any other mining rights, options and privileges now owned by the Grantors in connection with the above described coal.

Item 8 - Deed Rights to Tract 1-22-11

Party of second part to have the free and uninterrupted right of way into and under said land at such points and in such manner as may be proper and necessary for the purpose of digging, mining, draining, and ventilating and carrying away said coal, together with the privilege of mining and removing through said described premises, other coal belonging to said party of the second part, its successors and assigns, or which may hereafter be acquired.

Item 9 - Deed Rights to Tract 1-22-12

Party of second part to have the free and uninterrupted right of way into, and under said land, at such points and in such manner as may be proper and necessary for the purpose of digging, mining,

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draining and ventilating, and carrying away said coal, (or from the removal of all of said coal), together with the privilege of mining and removing through said described premises, other coal belonging to said party of the second part, its successors and assigns, heirs and assigns, or which may hereafter be acquired.

Item 10 - Deed Rights to Tract 1-22-15

Party of second part to have the free and uninterrupted right of way into and under said land, at such points, and in such manner as may be proper and necessary for the purpose of digging, mining, draining and ventilating, and carrying away said coal, (hereby waiving all surface damages, or damages of any sort, arising therefrom, or from the removal of all of said coal), together with the privilege of mining and removing through said described premises, other coal belonging to said party of the second part, its successors and assigns, or which may hereafter be acquired.

Item 11 - Deed Rights to Tract 1-22-17

Party of second part to have the free and uninterrupted right of way into and under said land at such points, and in such manner as may be proper and necessary for the purpose of digging, mining, draining and ventilating and carrying away said coal (hereby waiving all surface damages, or damages of any sort, arising therefrom or from the removal of all of said coal), together with the privilege of mining and removing through said described premises, other coal belonging to said party of the second part, its successors, heirs, and assigns or which may hereafter be acquired.

Item 12 - Deed Rights to Tract 1-22-18

Party of second part to have the free and uninterrupted right of way into, and under said lands at such points and in such manner as may be proper and necessary for the purpose of digging, mining, draining and ventilating, and carrying away said coal, together with the privilege of mining and removing through said described premises, other coal belonging to said party of the second part, its successors and assigns, or which may hereafter be acquired.

Item 13 - Deed Rights to Tract 1-22-19

Party of second part to have the free and uninterrupted right of way into, and under said lands at such points and in such manner as may be proper and necessary for the purpose of digging, mining, draining and ventilating, and carrying away said coal, together with the privilege of mining and removing through said described premises, other coal belonging to said party of the second part, its successors and assigns, or which may hereafter be acquired.

Item 14 - Deed Rights to Tract 1-22-21

Together with the right to mine and remove all the minable coal in said number eight seam and the

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right to make, maintain and use entries and air courses through said number eight seam, to have and transport through said entries and air courses coal mined from said number eight seam under lands lying north, east, south or west of the above described premises.

Item 15 - Deed Rights to Tract 1-22-22

Party of second part to have the free and uninterrupted right of way into, and under said land, at such points, and in such manner as may be proper and necessary for the purpose of digging, mining, draining and ventilating and carrying away said coal, (or from the removal of all of said coal) together with the privilege of mining and removing through said described premises, other coal belonging to said party of the second part, its successors and assigns, or which may hereafter be acquired.

Item 16 - Deed Rights to Tract 1-22-23

Party of second part to have the free and uninterrupted right of way into, upon and under said land at such points and in such manner, as may be proper and necessary for the purpose of digging, mining, draining and ventilating, and carrying away said coal (hereby waiving all surface damages or damages of any sort, arising herefrom, or from the removal of all of said coal), together with the privilege of mining and removing through said described premises, other coal belonging to said party of the second part, its successors and assigns, or which may hereafter be acquired.

Item 17 - Deed Rights to Tract 1-22-24

Party of second part to have the free and uninterrupted right of way into, upon, and under said land, at such points and in such manner as may be proper and necessary for the purpose of digging, mining, draining and ventilating, and carrying away said coal, (hereby waiving all surface damages, or damages of any sort, arising therefrom, or from the removal of all of said coal), together with the privilege of mining and removing through said described premises, other coal belonging to said party of the second part, its successors and assigns, or which may hereafter be acquired.

Item 18 - Deed Rights to Tract 1-22-29

Party of second part to have the free and uninterrupted right of way into, and under said land, at such points, and in such manner as may be proper and necessary for the purpose of digging, mining, draining and ventilating, and carrying away said coal, together with the privilege of mining and removing through said described premises, other coal belonging to said party of the second part, its successors and assigns, or which may hereafter be acquired.

Item 19 - Deed Rights to Tract 1-22-30

Together with the free and uninterrupted right of way into, upon and under said land at such points and in such manner as may be proper and necessary for the purpose of digging, mining, draining,

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ventilating and carrying away said coal; hereby waiving all surface damages or damages of any sort arising therefrom or through the removal of all of said coal; together with the privilege of mining and removing through said described premises other coal belonging to said Grantee, its successors and assigns, or which may hereafter be acquired by said Grantee, its successors and assigns.

Item 20 - Deed Rights to Tract 1-22-52

Party of second part to have the free and uninterrupted right of way into, upon and under said land at such points and in such manner, as may be proper and necessary for the purpose of digging, mining, draining and ventilating, and carrying away said coal (hereby waiving all surface damages or damages of any sort, arising herefrom, or from the removal of all of said coal), together with the privilege of mining and removing through said described premises, other coal belonging to said party of the second part, its successors and assigns, or which may hereafter be acquired.

Item 21 - Deed Rights to Tract 1-22-53

Party of second part to have the free and uninterrupted right of way into upon and under said land at such points, and in such manner as may be proper and necessary for the purpose of digging, mining, draining, and ventilating and carrying away said coal, (hereby waiving all surface damages or damages of any sort, arising therefrom, or from the removal of all of said coal), together with the privilege of mining and removing through said described premises other coal belonging to said party of the second part, its successors and assigns, or which may hereafter be acquired.

Item 22 - Deed Rights to Tract 1-22-57

Party of second part to have the free and uninterrupted right of way into and under said land, at such points, and in such manner as may be proper and necessary for the purpose of digging, mining, draining and ventilating, and carrying away said coal, (hereby waiving all surface damages or damages of any sort arising therefrom or from the removal of all of said coal) together with the privilege of mining and removing through said described premises, other coal belonging to said party of the second part, its successors and assigns, or which may hereafter be acquired.

Item 23 - Deed Rights to Tract 1-22-59

Party of second part to have the free and uninterrupted right of way into and under said land at such points, and in such manner as may be proper and necessary for the purpose of digging, mining, draining and ventilating and carrying away said coal (hereby waiving all surface damages or damages of any sort, arising therefrom, or from the removal of all of said coal) together with the privilege of mining and removing through said described premises, other coal belonging to said party of the second part, its successors and assigns, or which may hereafter be acquired.

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Item 24 - Deed Rights to Tract 1-24-1, -2, -3, and -4

Together with the right in perpetuity of mining, taking out and removing such coal; also the further right in perpetuity to remove coal to and from any other land or lands through entries, shafts, air-ways and mine openings of any and every kind whatever, with the same rights, in removing coal to or from such other lands, to use the surface, entries, shafts, air-ways, mine openings and other appliances for mining upon, in, through, or under the lands herein described, as are herein granted for the mining and removal of the coal hereby conveyed; mining of said coal by the stripping method is prohibited.

The said Grantors, for themselves and for their heirs, executors, administrators and assigns, hereby waive and release any and all claims and demands which we may now or hereafter have, or claim to have, against said Grantee, its successors and assigns, by reason of or in any way resulting from the removal of coal from under and over said premises, or any part thereof.

Item 25 - Deed Rights to Tract 1-25-1

Together with the free and uninterrupted right-of-way into, upon and under the lands hereinbefore described in which said vein of coal is located at such points and in such manner as may be proper and necessary for the purpose of digging, mining, coking, draining, ventilating and carrying away said coal, and the right and privilege of mining and removing through said described premises other coal belonging to or which may hereafter be acquired by the said Grantee, its successors and assigns; together with all other rights and waiver of damage and rights of action acquired from Frances Barrett by her deed to them executed on the 1st day of April, 1959 which said rights are set out in said deed as follows:

Together with the certain mining and surface rights to be exercised in common with the owners of the undivided two-thirds interest of said Pittsburgh or Number Eight Vein of coal underlying the Northeast quarter of Section 23, Township 6, Range 4, Smith Township, Belmont County, Ohio, which said rights so granted consist of the free and uninterrupted right of way into, upon and under said land at such points and in such manner as may be necessary and proper for the purpose of digging, mining, coking, draining, ventilating and carrying away certain coal, together with the right and privilege of mining and removing through said described premises other coal belonging to, or which may hereafter be acquired by the said Grantees herein, their heirs and assigns, hereby waiving for herself, her heirs and assigns, any claim for damage or right of action against the Grantees, their heirs and assigns, that may be caused said lands by said mining operations and agreeing as the owner of the surface overlying said Number Eight Vein of coal for herself, her heirs and assigns, that neither she nor they shall at any time make any claim for damages or bring suit for or on account of the Grantees, their heirs or assigns, removing said coal or in exercising any of the mining rights hereby conveyed.

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Item 26 - Deed Rights to Tract 1-26-1

Together with the free and uninterrupted right of way into, upon and under said land at such points and in such manner as may be necessary and proper for the purpose of digging, mining, coking, draining, ventilating and carrying away certain coal, together with the right and privilege of mining and removing through said described premises other coal belonging to, or which may hereafter be acquired by the said Grantee, its successors and assigns, hereby waiving for themselves, their heirs and assigns, any claim for damage or right of action against the Grantee, its successors and assigns, that may be caused said lands by said mining operations and agreeing that they shall never make any claim for damages or bring suit for or on account of the Grantee, its successors or assigns, removing said coal or in exercising any of the mining rights hereby conveyed.

Item 27 - Deed Rights to Tract 1-27-1

TOGETHER with the free and uninterrupted rights of way into and under the surface of the above granted three tracts of land at such points and in such manner as may be useful for the purpose of digging, draining, ventilating, mining and removing said coal, together with the right to mine and remove through said described premises said coal and other coal from neighboring lands which are now owned by said Grantee, or may be hereafter acquired by it, its successors or assigns. The said Grantee, its successors or assigns, shall in no wise be liable for damages for failure to support the overlying surface or for destroying any spring, or well of water, by reason of the removal of said coal, or the exercise of any of the above mining privileges.

Item 28 - Deed Rights to Tract 1-28-1 and 2

TOGETHER with the right and privilege of mining and removing all of said coal, and the right of way into and under said lands at such points, and in such manner as is convenient for the advantageous and economical operation of said coal, together with the right and privilege of mining and removing through the openings made in said coal, other coal underlying other lands, together with the right and privilege of ventilating and draining the workings in said coal, hereby waiving any and all damages that arise from the mining, removal, ventilating and drainage of said coal to the overlying strata or anything therein or thereon; together with the right to purchase any or all of said premises, (except the ground upon which buildings now on said premises stand and the premises within the immediate inclosures surrounding said buildings) at any time that may be necessary or useful for mining, removing, transporting or marketing said coal at the agreed price of \$300.00 per acre, upon payment of which sum to the owner of the surface, said Grantee, its successors or assigns, shall be entitled to a conveyance of the fee simple title to said premises by deed of general warranty, free and clear of all liens, encumbrances and dower rights.

Item 29 - Deed Rights to Tract 1-19-29

Party of Second Part to have the free and uninterrupted right of way, into, upon, and under said land

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at such points and in such manner as may be proper and necessary for the purpose of digging, mining, draining and ventilating and carrying away said coal (hereby waiving all surface damages or damages of any sort, arising therefrom of froth the removal of all of said coal), together with the privelege of mining and removing through said described premises, other coal belonging to said party of the second part, his heirs and assigns, or which may hereafter be acquired.

Item 30 - Deed Rights to Tract 76

Together with the free and uninterrupted right of way into, on and under said land at such points and in such manner as may be proper and necessary for the purpose of digging, mining, draining, and ventilating by air shafts and otherwise and of carrying away the coal, together with the privilege of mining and removing through the above described premises other coal belonging to the Grantee, its successors or assigns, or which may hereafter be acquired: together with any other mining rights, options and privileges now owned by the Grantors in connection with the above described coal.

Item 31 - Deed Rights to Tract 77

Party of the Second part are to have the free and uninterrupted right of way, into, upon and under said land at such points, and in such manner as may be proper an necessary for the purpose of digging, mining, draining and ventilating, and carrying away said coal, (hereby waiving all surface damages or damages of any sort, arising therefrom or from the removal of all of said coal, together with the privilege of mining and removing through said described premises, other coal belonging to said party of the second part, its successors, heirs, and assigns, or which may hereafter be acquired.

Item 32 - Deed Rights to Tract 78

Together with proper openings and the free and uninterrupted right of way into, on and under the land at such points and in such manner as may be proper and necessary for the purpose of digging, mining, draining and ventilating by air shafts or otherwise and of carrying the coal (hereby waiving all surface damages or damages of any sort arising from the working of the mines or from the removal of all of the coal), together with the privilege of mining and removing through the above described premises other coal belonging to the Grantee, its successors or assigns, or which may hereafter be acquired.

Item 33 - Deed Rights to Tract 104

Party of Second part to have the free and uninterrupted right of way -- and under said land, at such points and in such manner as may be proper and necessary for the purpose of digging, mining, draining and ventilating and carrying away said coal (hereby waiving all surface damages or damages of any sort, arising therefrom, or from the removal of all of said coal), together with the privilege of mining and removing through said described premises other coal belonging to said party of the second part, its successors and assigns, or which may hereafter be acquired.

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Item 34 - Deed Rights to Tract 105

Party of Second part to have the free and uninterrupted right of way, into, upon, and under said land at such points, and in such manner as may be proper and necessary for the purpose of digging, mining, draining and ventilating, and carrying away said coal, (hereby waiving all surface damages, or damages of any sort, arising therefrom or from the removal of all of said coal), together with the privilege of mining and removing through said described premises, other coal belonging to said party of the second part, its successors, heirs, and assigns, or which may hereafter be acquired.

Item 35 - Deed Rights to Tract 106

Party of Second part to have the free and uninterrupted right of way into and under said land at such points and in such manner as may be proper and necessary for the purpose of digging, mining, draining and ventilating and carrying away said coal (hereby waiving all surface damages, or damages of any sort, arising therefrom or from the removal of all of said coal), together with the privilege of mining and removing through said described premises, other coal belonging to said party of the second part, its successors and assigns, or which may hereafter be acquired.

Item 36 - Deed Rights to Tract 107

Party of Second part to have the free and uninterrupted way into and under said land, at such points and in such manner as may be proper and necessary for the purpose of digging, mining, draining and ventilating and carrying away said coal, (hereby waiving all surface damages or damages of any sort, arising therefrom or from the removal of all of said coal), together with the privilege of mining and removing through said described premises, other coal belonging to said party of the second part, its successors and assigns, or which may hereafter be acquired.

Item 37 - Deed Rights to Tract 108

Party of Second Part to have the free and uninterrupted right of way into, and under said land, at such points, and in such manner as may be proper and necessary for the purpose of digging, mining, draining, and ventilating, and carrying away said coal, the party of the second part shall pay all surface damages for mining and carrying away the described coal, together with the privilege of mining and removing through said described premises, other coal belonging to said party of the second part, its successors and assigns, or which may hereafter be acquired.

Item 38 - Deed Rights to Tract 109

Party of Second part to have the free and uninterrupted right of way into and under said land at such points and in such manner as may be proper and necessary for the purpose of digging, mining draining, and ventilating and carrying away said coal, (hereby waiving all surface damages, or damages of any sort, arising therefrom or from the removal of all of said coal), together with the

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privilege of mining and removing through said described premises, other coal belonging to said party of the Second part, its successors and assigns, or which may hereafter be acquired.

Item 39 - Deed Rights to Tract T2 and T3

Together with the full right to explore for, test, work, mine, produce, develop, clean, process, sell and remove any or all of the coal and coal seam gas incidental thereto in, on and underlying the Premises and other coal now or hereafter owned, leased or otherwise controlled by Lessee, by any underground mining method or machinery, whether now or hereafter known, including but not limited to the continuous mining process and longwall mining process; and the right of ingress, egress and regress to, from, over and across said Premises for the purpose of removing and transporting coal from within or without said Premises without additional charge; and the right to bring upon said Premises men, machinery, materials and equipment necessary, convenient or useful for the exploring, testing, mining and marketing of said coal by the methods hereunder authorized; and the right to construct, erect, use, maintain, repair, replace, move, remove, and relocate in or under the Premises roads, conveyor systems, machinery, railroad tracks, shops, power and communications lines and other equipment and facilities; and the right to transport personnel, supplies, equipment, coal and other materials into, through and under said Premises; and the right to mine said coal without any requirement to provide any lateral or subjacent support to the Premises, or any liability to Lessor for any damage which may result either to the surface of, or any strata in, on and under said Premises or to any surface or underground water supplies or sources located thereon or therein or to any structures now on or hereafter constructed on said Premises; and all such other rights, powers and privileges as may be necessary, useful or incidental thereto, including without limitation the right to make and use openings and underground passages for any purposes, including but not limited to ventilation and drainage, and to disturb so much of the surface and subsurface of the Premises as may be useful or incidental in accordance with the mining methods adopted by Lessee.

Item 40 - Deed Rights to Tract 1-22-60

Party of second part to have the free and uninterrupted right of way into and under said land, at such points and in such manner as may be proper and necessary for the purpose of digging, mining, draining and ventilating and carrying away said coal (hereby waiving all surface damages or damages of any sort, arising therefrom, or from the removal of all of said coal), together with the privilege of mining and removing through said described premises, other coal belonging to said party of second part, its successors and assigns, or which may hereafter be acquired.

Item 41 - Deed Rights to Tract 1-22-20

Party of second part to have the free and uninterrupted right of way into, upon and under said land, at such points and in such manner as may be proper and necessary for the purpose of digging, mining, draining and ventilating and carrying away said coal, (hereby waiving all surface damages, or damages of any sort, arising therefrom, or from the removal of all of said coal), together with the privilege of

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mining and removing through said described premises, other coal belonging to said party of the second part, its successors and assigns, or which may hereafter be acquired.

Item 42 - Deed Rights to Tract 1-22-16

Party of second part to have the free and uninterrupted right of way into, upon and under said land, at such points and in such manner as may be proper and necessary for the purpose of digging, mining, draining and ventilating, and carrying away said coal, (hereby waiving all surface damages, or damages of any sort, arising therefrom, or from the removal of all of said coal), together with the privilege of mining and removing through said described premises other coal belonging to said party of the second described premises other coal belonging to said party of the second part, its successors and assigns, or which may hereafter be acquired.

Item 43 - Deed Rights to Tract 1-22-13 and -14

Party of second part to have the free and uninterrupted right of way into, and under said land, at such points, and in such manner as may be proper and necessary for the purpose of digging, mining, draining, and ventilating, and carrying away said coal. The party of the second part shall pay all surface damages for mining and carrying away the above described coal, together with the privilege of mining and removing through said described premises, other coal belonging to said party of the second part, its successors and assigns, or which may hereafter be acquired.

Item 44 - Deed Rights to Tract 1-19-82

Party of the Second Part are to have the free and uninterrupted right of way into, upon and under said land, at such points, and in such manner as may be proper and necessary for the purpose of digging, mining, draining and ventilating and carrying away said coal, (hereby waiving all surface damages, or damages of any sort arising therefrom or from the removal of all of said coal), together with the privilege of mining and removing through said described premises, other coal belonging to said party of the second part, his heirs and assigns, or which may hereafter be acquired.

Item 45 - Deed Rights to Tract C-1

Parties of second part are to have the free and uninterrupted right of way into, upon, and under said land at such points and in such manner as may be proper and necessary for the purpose of digging, mining, draining and ventilating and carrying away said coal (hereby waiving all surface damages or damages of any sort arising therefrom or from the removal of all of said coal) together with the privilege of mining and removing through said described premises other coal belonging to said parties of the second part their heirs and assigns or which may hereafter be acquired.

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Item 46 - Deed Rights to Tract 1-22-62

Party of second part to have the free and uninterrupted right of way into, and under said land at such points, and in such manner as may be proper and necessary for the purposes of digging, mining, draining and ventilating and carrying away said coal, together with the privileges of mining and removing through said described premises, other coal belonging to said party of the second part, its successors and assigns, or which may hereafter be acquired.

Item 47 - Deed Rights to Tract 103

Party of Second part to have the free and uninterrupted right of way into, and under said land at such points and in such manner as may be proper and necessary for the purpose of digging, mining, draining, and ventilating ant carrying away said coal (hereby waiving all surface damages or damages of any sort arising therefrom, or from the removal of all of said coal), together with the privilege of mining and removing through said described premises other coal belonging to said party of the second part, its successors and assigns, or which may hereafter be acquired.

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draining, and ventilating ant carrying away said coal (hereby waiving all surface damages or damages of any sort arising therefrom, or from the removal of all of said coal), together with the privilege of mining and removing through said described premises other coal belonging to said party of the second part, its successors and assigns, or which may hereafter be acquired.

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PROOF OF PUBLICATION

The State of Ohio
County of Belmont, ss:

The undersigned, being sworn, says that he or she is an employee of Eastern Ohio Newspapers, Inc., A Corporation, publisher of the Times Leader a newspaper published in Martins Ferry, Belmont County, Ohio, each day of the week except Saturday and of general circulation in said city and county; that it is a newspaper meeting the requirements of sections 7.12 and 5721.01 Ohio Revised Code as amended effective September 14, 1957; that affiant has custody of the records and files of said newspaper; and that the advertisement of which the annexed is a true copy, was published in said newspaper on each of the days in the month and year stated, as follows:

May 21, 23, 28
June 4, 9, 19, 27
Carol Mounten

Subscribed by Affiant and sworn
to before me, this 9 day of

June, A.D. 19 97
Rebecca L. Anderson
Notary Public

REBECCA L. ANDERSON
Notary Public, State of Ohio
My Commission Expires Nov. 25, 2001

Printer's Fees \$ 150.75
Notary's Fees \$ _____

THE TIMES LEADER
Martins Ferry, Ohio
Bellaire, Ohio

PUBLIC NOTICE

The Ohio Valley Coal Company, 56854 Pleasant Ridge Road, Alledonia, Ohio 43902, has submitted an underground coal mining application designated as D-0360-7 to the Ohio Department of Natural Resources, Division of Mines and Reclamation. The proposed additional underground acreage for Permit D-0360 is located in Belmont County, Smith Township, Sections 22, 23, 24, 28, 29, 30, 34, 35, and 36. The area is located on the Bethesda, Hunter, Armstrong Mills and St. Clairsville 7 1/2 minute USGS quadrangle maps, approximately 1.2 miles north of Centerville, Ohio. The proposed underground workings encompass 2650 acres. Coal in this underground area will be removed using full recovery methods.

This application is on file at the Belmont County Recorder's Office located at the County Court House on Main Street in St. Clairsville for public viewing. Written comments or requests for an informal conference may be sent to the Division of Mines and Reclamation, 1855 Fountain Square Court, Columbus, Ohio 43224 within thirty days of the last date of publication of this notice. T-Adv. May 21, 28.
June 4, 9

JAN 30 1998

D0360-7

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TOVCC 21392

ADDENDUM TO PAGE 15, PART 1, G(2)
THE OHIO VALLEY COAL COMPANY
POWHATAN NO. 6 MINE
PERMIT D-0360

Public Notice

The Ohio Valley Coal Company, 56854 Pleasant Ridge Road, Alledonia, Ohio 43902, has submitted an underground coal mining application designated as D-0360-7 to the Ohio Department of Natural Resources, Division of Mines and Reclamation. The proposed additional underground acreage for Permit D-0360 is located in Belmont County, Smith Township, Sections 22, 23, 24, 28, 29, 30, 34, 35, and 36. The area is located on the Bethesda, Hunter, Armstrong Mills and St. Clairsville 7 ½ minute USGS quadrangle maps, approximately 1.2 miles north of Centerville, Ohio. The proposed underground workings encompass 2650 acres. Coal in this underground area will be removed using full recovery methods.

This application is on file at the Belmont County Recorder's Office, located at the County Court House on Main Street in St. Clairsville for public viewing. Written comments or requests for an informal conference may be sent to the Division of Mines and Reclamation, 1855 Fountain Square Court, Columbus, Ohio 43224 within thirty days of the last date of publication of this notice.

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ADDENDUM TO PAGE 16, PART 2, A(4)
THE OHIO VALLEY COAL COMPANY
POWHATAN NO. 6 MINE
PERMIT D-0360

METHOD USED TO IDENTIFY HISTORIC PROPERTIES
AS MINING PROGRESSES

Potential historic properties have been identified in Attachment 27A submitted with this application. Properties that are deemed eligible for listing on the National Register for Historic Places will be identified by the SHPO and will be noted as such by OVCC. As mining progresses, OVCC will identify properties to be undermined and proper mitigative efforts will be implemented.

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D0360-7

ADDENDUM TO PART 3, PAGE 25, D(12)
THE OHIO VALLEY COAL COMPANY
POWHATAN NO. 6 MINE
PERMIT D-0360

RECLAMATION PLAN - FISH, WILDLIFE, ENVIRONMENTAL VALUES

The proposed longwall mining operation is not expected to impact fish, wildlife, and other related environmental values. The longwall will not undermine any streams where fish live. Minnows have been found in some of the larger stream segments within the application area. However, the normal annual cycle shows that during the summer and fall months, when the stream flow is minimal, the minnows swim downstream, only to return again. Observations show that stream segments that go dry following subsidence have returned to near their normal flow, and will again support minnows. The larger streams will return to normal flow faster than smaller streams because more sediment is carried in larger streams and help fill any residual cracks that may be found. There are several ponds overlying the application area, and larger fish live in them. Our experience at the Powhatan No. 6 Mine is that ponds are not greatly influenced by subsidence due to the amount of cover. Wildlife has never been shown to be affected by longwall mining. If surface slips are caused by mining activities, over the mining area, The Ohio Valley Coal Company will restore the land to a condition equal to its original value and reasonably foreseeable use. Undeveloped springs that are found above the application area may be dewatered and usually reposition themselves downstream. Ohio Valley will replace undeveloped springs if they are legitimately used according to our water replacement plan.

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ADDENDUM TO PAGE 25, PART 3, D(12)
THE OHIO VALLEY COAL COMPANY
POWHATAN NO. 6 MINE
PERMIT D-0360

PLAN FOR MINIMIZING TO THE EXTENT POSSIBLE AND USING THE BEST
TECHNOLOGY CURRENTLY AVAILABLE DISTURBANCES AND ADVERSE
IMPACTS OF THE CURRENT OPERATION
ON FISH, WILDLIFE AND RELATED ENVIRONMENTAL VALUES AND
ACHIEVING ENHANCEMENT OF SUCH RESOURCES WHERE PRACTICAL

The proposed operation, longwall mining, minimizes to the extent possible (and is the best technology currently available) impacts on fish, wildlife, and environmental values because it occurs in a planned, predictable and controlled manner. There are no impacts anticipated to fish, wildlife, and environmental values. Areas where longwall mining have occurred do not show any impacts on such resources. Streams in this application area may contain minnows that flourish during periods when there is high water conditions. But, in the dry periods, these minnows migrate downstream to deeper water. They migrate back upstream during the following year. Higher order streams undermined by the longwall are not expected to be changed greatly during mining, and any impacts are temporary, as evidenced by mining in other areas. Therefore, no impacts are anticipated to fish, wildlife, and such resources. Ponds in this area that may contain fish historically have not been impacted by longwall mining.

Wetlands

If undeveloped springs that are legitimately used for domestic purposes at the time of mining are dewatered, they will be replaced if requested by the surface owner after an adequate time period has passed to determine if the spring will be permanently impacted. If the dewatered undeveloped springs were legitimately used, they will be replaced according to the water replacement plan in this application. Surface drainage in such areas is not expected to be impacted as a result of mining. In our experience, seepage zones may emerge downstream of where they originally emerged. If this situation occurs and the new location is off the original owners property, water will be restored to the original owner's property according to the water replacement plan in this application if the water source is legitimately used for domestic purposes.

D0360-7

JAN 30 1998

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ADDENDUM TO PART 2, PAGE 16, B(1)
THE OHIO VALLEY COAL COMPANY
POWHATAN NO. 6 MINE
PERMIT D-0360

GEOLOGY DESCRIPTION

Stratigraphy of the proposed permit area is formed by the Monongahela formation of the Pennsylvania period, and the Dunkard group of Permian time. The primary strata of both sections consists of an alternating sequence of limestone, sandstone, siltstone, shale, claystone, and coal.

The Monongahela formation is approximately 245 feet thick. In ascending order, it occupies the interval from the Pittsburgh No. 8 to the Waynesburg No. 11 coal bed. The primary rock units are limestone, shale, and claystone. Limestone forms 44 to 68 percent of this stratigraphic interval. As a result of longwall mining, the immediate strata overlying the Pittsburgh No. 8 coal bed will cave to a height of 3 to 6 times the mining height, depending on the bulking factor of roof strata. The beds above this caved zone are provided some support by the caved rock but may sag and give rise to bed separation and may be subject to fracturing, to heights 24 to 54 times the mining height (120 to 270 feet above the mine).

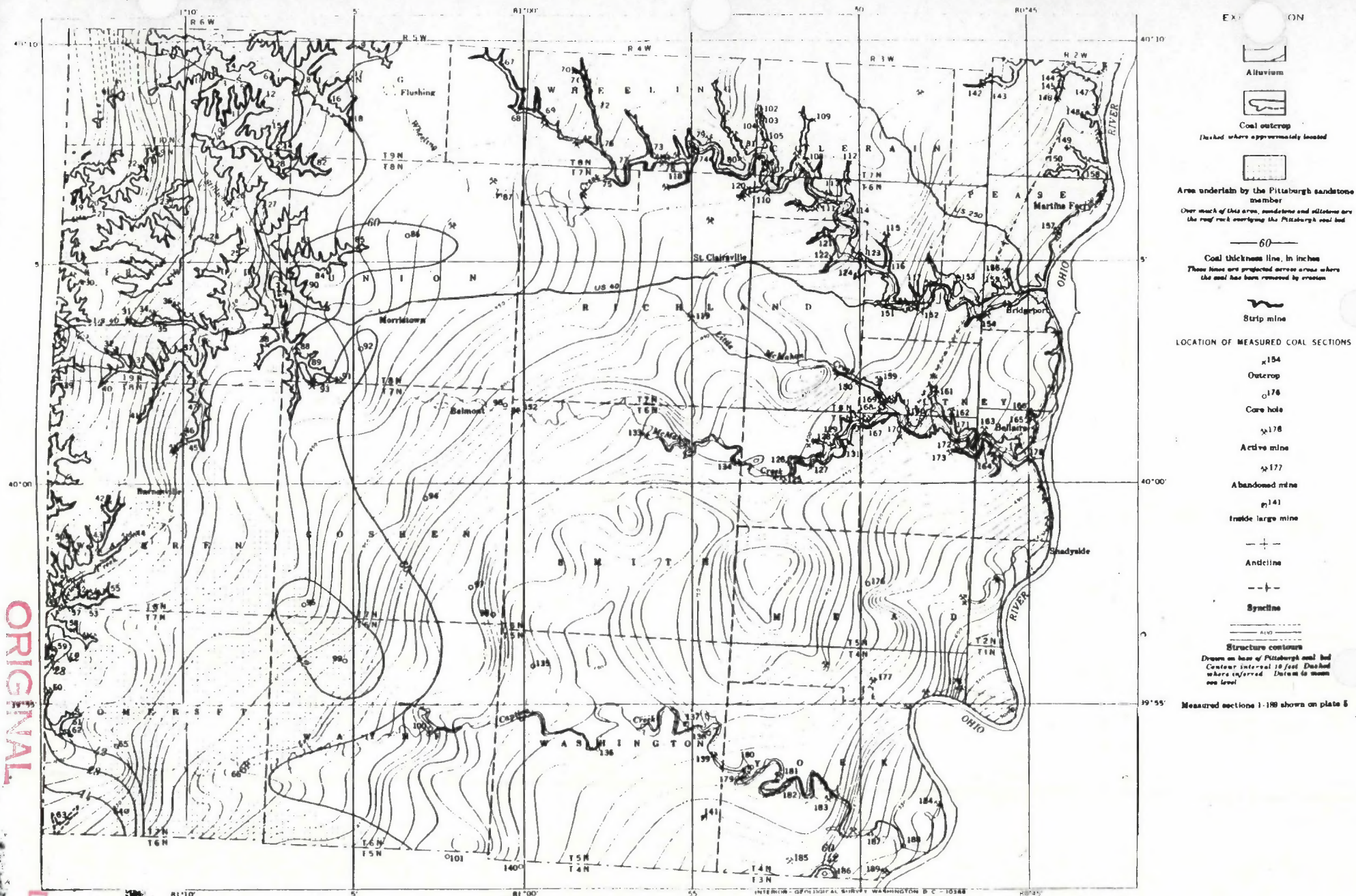
The Dunkard group is 250 to 300 feet thick, occupying the interval from the Waynesburg No. 11 coal bed to the ground surface. The primary rock units here are shale and claystone. These soft units form about 85 percent of this stratigraphic interval. This strata is primarily located within the constrained zone of disturbance resulting from longwall mining. The constrained zone is defined as that interval above 24 to 54 times the mining height and below 50 feet from the ground surface. This strata is expected to be sufficiently confined to prevent development of any fractures. Rock beds here will tend to absorb most of the strain energy without fracturing.

Strata close to the surface, however, are not sufficiently confined and may move in any direction. Surface cracks may be produced from tensile strains resulting from longwall mining. The depth of these cracks is generally estimated to be less than 50 feet.

The main safety against inflow of groundwater into the Powhatan No. 6 Mine is afforded by the constrained zone. The nature and thickness of the individual beds found here are of particular importance. Through extensive core drilling, multiple beds of claystone, with total thicknesses of 79 to 108 feet, have been identified. These claystone beds are relatively impermeable and generally capable of absorbing large amounts of strain energy before fracture. In the application area, it is our opinion that sufficient claystones are in-place to provide an adequate barrier against inflow from surface water and shallow groundwater disruptions caused by longwall mining. Where stream valleys are encountered, longwall operations is generally not planned under less than about 200 feet of cover to further protect the mine and overlying groundwater resources. The rock strata of Belmont County typically form a gentle monocline that dips southeasterly at grades less than one percent (Figure 2)

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D0360-7



MAP OF THE PITTSBURGH (NO. 8) COAL BED SHOWING DISTRIBUTION AND THE STRUCTURE AND THICKNESS OF THE LOWER BENCH OF THE BED IN BELMONT COUNTY, OHIO

2 1 0 2 4 6 MILES

FIGURE 2

ADDENDUM TO PART 2, PAGE 16, B(1)
PAGE TWO

and in the application area is southward to southeasterly. The base elevation of the No. 8 seam ranges from approximately 765 ft. in the south of the application area to approximately 840 ft. in the northwest corner.

The orientation of the major joints in rock and face cleat in coal is approximately N 75° W. The minor joints and butt cleats are generally perpendicular to these (N 15° E).

Geology and Coal Resources of Belmont County, Ohio, Geological Survey Professional Paper 380, reports that a small dome-shaped anticline lies in eastern Belmont County, primarily in Mead Township. This structure is located over three miles east of the Powhatan No. 6 Mine application area and, therefore, is not expected to have an impact on ground water flow in the application area.

In addition, there is a graben structure that passes through the Powhatan No. 6 Mine Reserve. This graben has been tracked through the adjacent Powhatan No. 3 Mine and enters the No. 6 reserve on the eastern boundary. It proceeds in a southwesterly direction, turns approximately 90 degrees, proceeds in a northwesterly direction, then turns again and proceeds in a general westerly direction off the mine property. The graben is located to the south of the application area and is not expected to have an impact on the ground water flow in the area.

The structural contours of the No. 8 Seam indicate that the graben is made up of a series of slumps in the deposit, indicated by a thickening of the seam at the bottom of the structure. This structure apparently affected the structural contours to the north of the graben, but these effects do not extend into the application area. Locally, these effects may be seen as areas where incidental water pools in the mine. This water is generally only a nuisance and does not require pumping. Most of the water found underground at the No. 6 mine is man-made during the mining cycle from water sprays (used for dust suppression) and cooling water for motors.

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JAN 30 1998

ADDENDUM TO PAGE 16, B(2)
THE OHIO VALLEY COAL COMPANY
POWHATAN NO. 6 MINE
PERMIT D-0360

Geological Impact of Coal Removal Upon Ground Water

The geological impact of coal removal, according to the PHC, is expected to vary from short term to long term. The Pittsburgh (No. 8) coal seam will be mined, and in this area has dip of approximately 40 ft per mile to the southeast, with the strike to the northeast. Ground water occurs in this area in several disconnected saturated zones associated with the occurrence of the coal seams and underlying clay stone units that prevent downward migration of the ground water. Ground water is generally limited to within the first 100 ft of the surface. Since primary porosity in the rock units is poor, nearly all of the ground water in this area of Ohio occurs as secondary porosity in the joints, cleats, fractures, and bedding planes of the rocks.

As longwall mining progresses, a caved area occurs immediately over the coal seam mined. Above this area, fractures occur in hard rocks and extend upward to about 200 ft above the coal seam. In the area above these fractures, a zone known as the continuous deformation zone develops where the rocks bend down and form the classic subsidence basin. In the center of the basin, rocks are put into compression, while there are areas of tension from the gate entries inward for a short distance and outside the basin for a short distance. As the mining occurs, the rocks may be fractured and bedding planes may open as a result of this deformation. This process provides new openings to contain additional ground water, with a lowering of the phreatic surface of the water in the area. After mining, the aquifers are more connected and provide a larger source of water for well recharge. Ground water in wells usually drops, and may be found lower in the well or even beneath the bottom of the well. Wells that are drilled deeper can be restored to their full potential usefulness.

The Powhatan No. 6 Mine is virtually a dry mine, with no pumping of water to the outside except for water from behind shaft linings. The deformation and not cracking of the soft rocks accounts for the dry conditions in the mine. Generally speaking, ground or surface water does not enter the No. 6 Mine.

In summary, the coal removal is expected to have some impact ground water in the application area. The impacts are described in the PHC and in the Addendum to Page 18 F(1).

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D0360-7

JAN 30 1998

TOVCC 21400



April 10, 1997

George V. Voinovich • Governor
Donald C. Anderson • Director

Mr. David L. Bartsch, P.E.
Environmental Coordinator and
Permit Administrator
The Ohio Valley Coal Company
56854 Pleasnat Ridge Road
Alledonia, Ohio 43902

RE: D-0360-7 Test Hole Variance Request dated March 17, 1997
2650 acres in Smith Township, Belmont County

Dear Mr. Bartsch:

The above-captioned variance request, which was revised on April 7, 1997, has been determined to be acceptable. Enclosed please find a copy of this request which is to be submitted as part of the permit application packet.

Sincerely,

Lisa J. Morris / by B. Stutz
Lisa Morris, Chief
Division of Mines and Reclamation

cc: George Mychkovsky, Geologist, Permitting Section, ODNR-Division of Mines & Reclamation

D0360-7



April 7, 1997

RECEIVED

APR 10 1997

DIVISION OF MINES
AND RECLAMATION

Mr. George Mychkovsky, Geologist
Division of Mines and Reclamation
Ohio Department of Natural Resources
1855 Fountain Square Court
Columbus, Ohio 43224

RECEIVED

APR 10 1997

DIVISION OF MINES
AND RECLAMATION

Dear Mr. Mychkovsky:

We are in receipt of your letter of April 2, 1997 addressing the test hole variance request dated March 17, 1997. The following is submitted for your review:

1. A revised structure contour map has been submitted.
2. The letter has been revised to indicate that five cross sections were submitted.
3. The cover letter has been changed to indicate that the well and spring inventory data, showing the depth of the water wells is not on the map but are in a separate listing entitled Listing of Well and Spring Information. This inventory will become the Attachment 14C for the application to be submitted.
4. Since the new test holes have now been drilled and located, their locations have been shown on the maps.
5. The structure contours have been redrawn in the area of test holes N94-1 and N96-01.
6. Please be advised that test holes not on the enclosed maps should be disregarded when considering this application. The test holes that are in the application area will be depicted on three cross-sections and submitted with the application. We apologize for any confusion this may have caused.
7. A separate map has been submitted showing the relative locations of the D-0360-3 and D-0360-6 application areas. The location map is not large enough to show the entire locations of these areas.
8. The geologic setting portion of the document by Mr. Burt A. Waite, PG has been revised to be more representative of the proposed application area.
9. The requested cross-sections are contained in the D-0360-3 approved application on file at the Division of Mines and Reclamation. This application is available to the Chief for your review. Since this information is available to you, we respectfully decline to re-submit it.
10. The PHC from D-0360-3 cannot be changed since it is part of an approved application. The document by Mr. Waite has been revised as needed. The PHC for the proposed application area will reflect these new comments.

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(614) 926-1351 • FAX (614) 926-1615

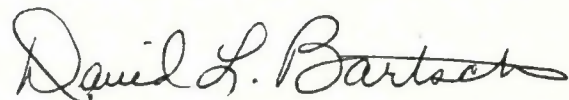
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TOVCC 21402

11. Nearly all of the ground water in this region is limited to the first 100 ft. of the surface. This information is confirmed by our drilling and from the locally developed wells and springs. Since there is very little downward migration of water, and the confining pressures beneath the ridge tops prevents water from flowing horizontally into the hillside, if water flows horizontally, it flows down-dip or comes out as hillside springs and the result is hydrologically localized flow systems. The water on a ridge top is continuous along the ridge top, but not from ridge top to ridge top, which in part explains why wells have different static water levels on different ridge tops and why springs appear at different elevations on different hillsides. The "Near-Surface Saturated Zone" does result in highly localized flow systems.
12. As explained in item 9 above, the PHC from application area D-0360-3 is available to the Chief and to yourself as the reviewer of this test hole variance request. Tables 2 and 3 describe the probable hydrologic consequences to developed sources located in the D-0360-3 application area and is not applicable for this proposed application area. The Listing of Well and Spring Information enclosed in this request is applicable to this proposed application area. As explained in the cover letter, the PHC from D-0360-3 was submitted to describe the geology of the area only, not as a second review of the potential hydrologic impacts from longwall mining in the D-0360-3 area or as a review of the potential hydrologic impacts for this proposed area. The Listing of Well and Spring Information was submitted to describe the near-surface saturated zone as additional information regarding the location of ground water that you may need for your review.
13. The regional hydrology narrative has been revised as needed.

If you have any questions, please contact me.

Sincerely,
THE OHIO VALLEY COAL COMPANY



David L. Bartsch, P.E.
Environmental Coordinator and
Permit Administrator

cc B. A. Waite
File

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D0360-7



March 17, 1997

Ms. Lisa Morris, Chief
Division of Mines and Reclamation
Ohio Department of Natural Resources
1855 Fountain Square Court
Columbus, Ohio 43224

Dear Ms. Morris:

The Ohio Valley Coal Company is preparing an application to add 2650 acres of underground (Pittsburgh No. 8 Seam) full-recovery reserves adjacent to our currently approved underground mining area. A total of 17 test holes would be required by OAC 1501:13-4-13. There are currently four test holes within the proposed application area and an additional six holes located nearby. Drilling logs, drilling data, and Attachment 13's for these test holes are included with this letter. We have just installed three additional test holes within the proposed application area. Preliminary driller logs and geologist logs (shown as Attachment 13's) are included herein. We respectfully request a test hole variance request in accordance with OAC 1501:13-4-13(C)(3). The following information is submitted in support of this request:

1. A map showing the existing test holes, their surface elevations, their coal elevations and the structural contours based on these holes and the surrounding test holes. The proposed mining area boundary and hydrologic boundary are also shown on the map.
2. Logs of the test holes and modified attachment 13's for each hole.
3. A total of five (5) cross sections of the holes within and near the application area.
4. Logs and Attachment 13's for test holes in the D-0360-3 adjacent area found immediately to the east of the proposed area. We contend that the geology in this proposed area is identical to the geology in the D-0360-3 area, and the other approved adjacent areas. The D-0360-3 and other adjacent area applications are on file with the Division of Mines and Reclamation and are available for your review. A map is enclosed that shows the relative location of the D-0360-3, D-360-6 and D-0360-7 areas.
5. A map showing the known the location of sources of water in the area, and a listing of each spring and the depth of each well, with static water levels and flows and showing the vertical extent of the regional, near-surface saturated zone that is the source of the domestic and agricultural wells and springs. This information shows

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TOVCC 21404

February 8, 1997
Page 2

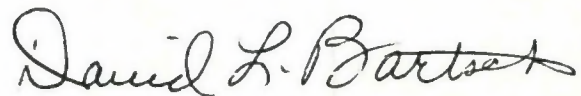
that the near-surface saturated zone lies within the first hundred feet of the surface as indicated by the test holes.

6. A statement from our hydrologist, Mr. Burt A. Waite, P.G., who will prepare the probable Hydrologic Consequences for this area, addressing the location of the water bearing zone, the regional hydrology, and the regional geology.

This information will be submitted with the application.

Based on the information available, we are confident that this test hole variance request should be approved. Since we are planning to submit the application very soon (within one month), we would appreciate your prompt attention to this matter. Should you have any questions, please contact me as soon as possible.

Sincerely,
THE OHIO VALLEY COAL COMPANY



David L. Bartsch, P.E.
Environmental Coordinator and
Permit Administrator

cc: J. R. Forrelli
B. A. Waite
B. Binon
File

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D0360-7

Description of Regional Hydrology, Geology, and Water Bearing Zone D-0360-7 Application Area

By
Burt A. Waite, P.G.

Topographic Setting

The Powhatan No. 6 Mine (DMR Permit No. D-0360) is located in Belmont County, which is situated in southeastern Ohio. The topography of the entire application area is typical of the Appalachian Plateau Province and is characterized by narrow, rounded ridges and deep, V-shaped valleys dissecting the terrain. Topographic relief within the application area is approximately 380 ft. The elevation varies between 1397 ft in the north central portion of the application area to 1020 ft. in the southeastern portion, near Williams Creek.

Williams Creek, located to the south of the application area, a tributary of McMahan Creek, and McMahan Creek are the dominant surface water features in this area. Both streams flow in an easterly direction, and headwaters from both streams occur within this area. McMahan Creek flows to the Ohio River, approximately 12 miles away.

Geologic Setting

The bedrock units that outcrop in the application area belong to the Dunkard Group, which is Upper Pennsylvanian to Permian in age. The rocks consist of the interbedded sandstone, siltstone, shale, mudstone, claystone, fresh- to brackish-water limestone, and coal. The Monongahela Formation (Pennsylvanian) underlies the Dunkard Group and consists of similar rock types. The Pittsburgh (No. 8) Coal seam which is the seam to be mined, marks the bottom of the Monongahela Formation. According to the Ohio Department of Natural Resources, water below 250 ft. beneath the stream bottoms is brackish.

Based on test hole data previously presented in applications to the DMR, plus those to be presented in this proposed application, soft rocks constitute approximately 50 to 80 percent of the rock column. Soft rocks are defined as shale, mudstone, claystone, sandy shale, limey shale, and claystone. The relatively high percentage of soft rocks is significant as these units have very limited primary permeability, tend to deform in a more plastic manner and are more prone to "self-healing" after fracturing. Aquifers in these units normally have low yields, are less susceptible to subsidence fracturing due to mining and, when fractured, tend to close in response to lithostatic pressures or plug with fine-grained sediment and may contain clays that swell when wetted.

In addition, there is considerable horizontal and vertical variability of the rock units. Rapid facies and hydrologic property changes tend to limit the horizontal continuity of the individual rock units. With the exception of the major coal seams, very few lithologic units are continuous across the proposed application area. Horizontal facies changes and corresponding changes in hydrologic properties of the rocks tend to enhance the importance of localized flow systems. In addition, most available ground water in this region is limited to the first 100 ft of the surface (the near-surface

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D0360-7

saturated zone) where enhanced secondary permeability associated with rock fracturing is present. This information is supported by the OVCC drilling records and from locally developed wells and springs. Ground water recharge in the upland or ridge top areas results in downward migration primarily within this shallow saturated zone. Because the topographic relief between ridge tops often exceeds 100 ft, there are localized flow systems under the hill tops that are not in hydrologic communication with adjacent hill tops. While the ground water under any given ridge top can be viewed as being continuous, the continuity generally does not extend to adjacent hill tops. Thus, the near surface saturated zone results in localized flow systems.

Additionally, laboratory studies of core samples from similar rocks indicate that vertical permeability is several orders of magnitude lower than horizontal permeability (Brown, et al., 1971). This condition again results in hydrologically localized flow systems that are not continuous across the application area.

The rocks in the proposed application area are nearly horizontal with a dip of less than one degree to the southeast. The coal elevation ranges from approximately 765 ft to almost 850 ft. Overburden thickness above the No. 8 Coal seam ranges from a low of about 200 ft. at the northern portion of the proposed application area to nearly 520 ft in the north-central portion of the area.

General Hydrologic Setting

The source of all ground and surface water in the application area is precipitation. Upon reaching the land surface, water that is not part of direct surface runoff or evapotranspiration infiltrates into the subsurface to become part of the ground water flow system or soil moisture. While shallow subsurface water is important to soil moisture and plant growth, there are no identified shallow unconsolidated aquifers in the area.

Within the bedrock system, ground water occurs in primary and secondary openings. Primary openings are pore spaces between sand, silt and clay grains formed at the time of sediment depositions. Primary permeability is the ability of water to move between pore spaces. In this area, primary permeability is very low and limited ground water movement occurs in hard or soft rocks as a result of primary openings (Stoner, 1983; Siplivy, 1992).

Secondary porosity and permeability is formed by fractures or partings in the rock mass. Most usable ground water in the application area occurs in secondary openings and the success of a water well in terms of yield potential is dependent upon the well penetrating a water-filled fracture zone that transmits enough water to the well bore to meet its intended use (Schmitt, et al., 1983; Waite, 1987).

Fractures are not ubiquitous in the area, however, and are not interconnected over large areas. For these reasons, it is very difficult to identify "aquifers" over large areas and the ground water flow system tends to be made up of small, localized fracture controlled entities. While fractures in hard rocks tend to stay open better than fractures in soft rock, the horizontal and vertical variability of even the hard rock units tend to produce hydraulically isolated areas.

D0360-7

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In addition, fractures tend to close at increasing depths due to overlying lithostatic pressures, thereby limiting the effective depth of the ground water flow system (Stoner, 1983). This condition is evident throughout the Powhatan No. 6 Mine. The mine, in general, is very dry with even minor amounts of water inflow limited to the low cover areas (generally less than 200 ft.). As discussed above, the overburden thickness in the application area ranges from about 200 ft. to nearly 520 ft. In this area, mining is expected to be limited to bleeder entries only. Therefore, very little water inflow into the mine is expected. No pumping to remove water from the application area is expected.

Conclusions

The topography, geology, and the hydrology of the application area is essentially identical to the areas previously permitted at the Powhatan No. 6 Mine. The existing test holes in the proposed application area show the same rock types as in test holes drilled in previously permitted areas, and the water bearing zone in the proposed application area are expected to remain consistent with other areas of the mine. Two or three additional test holes that were recently drilled confirm this belief, and should be adequate to further define the conditions within the application area

References

Brown, R.L., Parizek, R.R., 1971, "Shallow Ground Water Flow Systems Beneath Strip and Deep Coal Mines at Two Sites," Clearfield, PA, The Pennsylvania State University, Special Report SR-84, 208 p.

Schmidt, R.D. and G.A. Hnell, 1983, "A Fracture De-watering Approach to Controlling Ground Water Infiltration in Underground Coal Mines," Interim Report of U. S. Bureau of Mines, 55 p.

Siplivy, W.J., 1992, Probable Hydrologic Consequences, The Ohio Valley Coal Company Powhatan No. 6 Mine, Permit Application D-0360-2.

Stoner, T.D., 1983, "Probable Hydrologic Effects of Subsurface Mining," Ground Water Monitoring Review, Vol. 3, No. 1, pp. 128-137.

Waite, B.A., 1987, Probable Hydrologic Consequences, The Ohio Valley Coal Company Powhatan No. 6 Mine, Permit Application R-0360-1.

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**LISTING OF WELL AND SPRING INFORMATION
PROPOSED APPLICATION AREA**

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D0360-7

THE OHIO VALLEY COAL COMPANY
POWHATAN NO. 6 MINE
PERMIT D-0360, APPLICATION AREA D-0360-7
WELL AND SPRING INVENTORY

ID NO	ID CODE	OWNER	ELEV	DEPTH	SWL/FLOW	LITHOLOGY	USES
SP-223	3223.000000	RICE	1104	0	22-2.0	NSSZ	UNUSED
SP-226A	3226.001000	RICE	1170		.75-.3	NSSZ	LIVESTOCK
SP-226B	3226.002000	RICE	1155		.16-.12	NSSZ	UNUSED
SP-230	3230.000000	RUBEL	1181		1.6-4.1	NSSZ	LIVESTOCK
SP-231	3231.000000	RUBEL	1246		.64-11.5	NSSZ	LIVESTOCK
SP-240	3240.000000	HART	1170		1.5-5.5	NSSZ	DOMESTIC / LIVESTOCK
SP-241	3241.000000	SAFFELL	1190		1.0-6.6	NSSZ	DOMESTIC / LIVESTOCK
SP-244	3244.000000	MAYO	1290		.24-1.4	NSSZ	LIVESTOCK
SP-265	3265.000000	KINDLER	1200		.75-3.0	NSSZ	LIVESTOCK
SP-266	3266.000000	HUGHES	1100		1.5-1.5	NSSZ	UNUSED
SP-267	3267.000000	KINDLER	1225		1.5-2.0	NSSZ	LIVESTOCK
SP-268	3268.000000	KINDLER	1180		3.3-6.0	NSSZ	LIVESTOCK
SP-269	3269.000000	KINDLER	1220		5.0-5.0	NSSZ	LIVESTOCK
SP-270	3270.000000	BLAKE	1260		.71-.75	NSSZ	DOMESTIC
SP-271	3271.000000	SEACREST	1323		1.3-3.0	NSSZ	LIVESTOCK
SP-272	3272.000000	COYNE	1258		4.2-4.0	NSSZ	DOMESTIC
SP-273	3273.000000	COYNE	1265		1.0-1.5	NSSZ	UNUSED
SP-274	3274.000000	COYNE	1230		.5-3.0	NSSZ	UNUSED
SP-277	3277.000000	MAYO	1264		.25-.5	NSSZ	LIVESTOCK
SP-278	3278.000000	MAYO	1230		.5-.75	NSSZ	LIVESTOCK
SP-282	3282.000000	SIMPSON	1268		2.14	NSSZ	LIVESTOCK
SP-283	3283.000000	SIMPSON	1263		2.73	NSSZ	LIVESTOCK
SP-285	3285.000000	BIANCO	1190		8	NSSZ	DOMESTIC
W-166	4166.000000	EARLIWINE	1106	108	68-83	NSSZ	UNUSED
W-167	4167.000000	HEBRY	1090	96	48-60	NSSZ	DOMESTIC
W-168	4168.000000	FUNKHOUSER	1112	62	18-45	NSSZ	DOMESTIC
W-169	4169.000000	FUNKHOUSER	1112	25	18-19	NSSZ	DOMESTIC
W-170	4170.000000	MAY	1105	75	47-53	NSSZ	UNUSED
W-172	4172.000000	COLVIN	1113	89	19-33	NSSZ	UNUSED
W-173	4173.000000	RICE	1116	25	13-18	NSSZ	DOMESTIC
W-174	4174.000000	GRANT	1117	101	82-97	NSSZ	UNUSED
W-175	4175.000000	HAYES	1132	46	14-15	NSSZ	UNUSED
W-176	4176.000000	THOMAS	1142	43	15-17	NSSZ	UNUSED
W-177	4177.000000	DELANEY	1183		SEALED	NSSZ	DOMESTIC
W-268	4268.000000	DELANEY	1165		BURIED	NSSZ	UNUSED
W-315	4315.000000	HART	1288	88	34-41	NSSZ	DOMESTIC
W-316	4316.000000	SAFFELL	1213	72	39-52	NSSZ	UNUSED
W-317	4317.000000	HART	1303		BURIED	NSSZ	DOMESTIC
W-318	4318.000000	MAYO	1304	18	7-11	NSSZ	DOMESTIC
W-323	4323.000000	FUNKHOUSER	1138	120	59-62	NSSZ	DOMESTIC
W-344	4344.000000	CIMINI	1185	54	19-22	NSSZ	DOMESTIC
W-374	4374.000000	COLE	1290	51	41	NSSZ	DOMESTIC
W-375	4375.000000	KINDLER	1247		SEALED	NSSZ	DOMESTIC
W-376	4376.000000	C. BLAKE	1250	30	4	NSSZ	DOMESTIC
W-377	4377.000000	C. BLAKE	1282	86	46	NSSZ	DOMESTIC
W-378	4378.000000	KINDLER	1325	68	27	NSSZ	DOMESTIC
W-379	4379.000000	GROVER	1323	120	78	NSSZ	DOMESTIC
W-380	4380.000000	HORVATH	1350	80	61	NSSZ	DOMESTIC
W-381	4381.000000	PICKENS	1325	100	42	NSSZ	DOMESTIC
W-382	4382.000000	COYNE, T.K.	1350	155	82	NSSZ	DOMESTIC
W-383	4383.000000	SEACREST	1362	125	57	NSSZ	DOMESTIC
W-384	4384.000000	SEACREST	1335	80	32	NSSZ	DOMESTIC
W-385	4385.000000	SEACREST	1363	100	SEALED	NSSZ	DOMESTIC
W-386	4386.000000	STANFORD	1350		REFUSED MONIT.	NSSZ	DOMESTIC
W-387	4387.000000	BARRICKLOW	1260		REFUSED MONIT.	NSSZ	DOMESTIC
W-388	4388.000000	JOHNSON	1160		SEALED	NSSZ	DOMESTIC
W-389	4389.000000	SCHERNITZAUER	1145	78	SEALED	NSSZ	DOMESTIC
W-390	4390.000000	CLARK	1030	66	40	NSSZ	DOMESTIC
W-391	4391.000000	MITCHEL	1120	30	22	NSSZ	DOMESTIC
W-392	4392.000000	BLAKE, SR	1325	68	SEALED	NSSZ	DOMESTIC

THE OHIO VALLEY COAL COM Y
 POWHATAN NO. 6 MINE
 PERMIT D-0360, APPLICATION AREA D-0360-7
 WELL AND SPRING INVENTORY

ID NO	ID CODE	OWNER	ELEV	DEPTH	SWL/FLOW	LITHOLOGY	USES
W-393	4393.000000	BLAKE, JR.	1330	30	18	NSSZ	DOMESTIC
W-394	4394.000000	T.A. COYNE	1259	80	28	NSSZ	DOMESTIC
W-395	4395.000000	T.A. COYNE	1258	50	15	NSSZ	UNUSED
W-396	4396.000000	WORKMAN	1305	70	37	NSSZ	DOMESTIC
W-397	4397.000000	CRAMER	1310	51	36	NSSZ	DOMESTIC
W-398	4398.000000	HABIG	1303	60	40	NSSZ	DOMESTIC
W-401	4401.000000	S. SIMPSON	1318	113	39	NSSZ	DOMESTIC
W-404	4404.000000	C. POWELL	1155	52	18	NSSZ	DOMESTIC
W-405	4405.000000	SIMPSON	1322	103	76	NSSZ	UNUSED
W-406	4406.000000	SIMPSON	1322	24	22	NSSZ	UNUSED
W-407	4407.000000	SIMPSON	1306	63	56	NSSZ	UNUSED
W-408	4408.000000	SIMPSON	1305	33	26	NSSZ	DOMESTIC
W-409	4409.000000	SIMPSON	1318		PLUGGED	NSSZ	UNUSED
W-410	4410.000000	SIMPSON	1310	85	56	NSSZ	UNUSED
W-411	4411.000000	SIMPSON	1310		PLUGGED	NSSZ	UNUSED
W-412	4412.000000	SIMPSON	1305	68	59	NSSZ	UNUSED
W-413	4413.000000	SIMPSON	1280	47	27	NSSZ	UNUSED
W-414	4414.000000	SIMPSON	1280	55	14	NSSZ	UNUSED
W-415	4415.000000	SIMPSON	1135	72	20	NSSZ	UNUSED
W-417	4417.000000	R. KEMP	1142	90	59	NSSZ	DOMESTIC
W-418	4418.000000	R. KEMP	1150	41	11	NSSZ	UNUSED

*NSSZ = NEAR SURFACE SATURATED ZONE

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**GEOLOGY, HYDROLOGY, WATER BEARING ZONE
REPORT BY
BURT A. WAITE, P.G.**

ORIGINAL

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Description of Regional Hydrology, Geology, and Water Bearing Zone D-0360-6 Application Area

By

Burt A. Waite, P.G.

Topographic Setting

The Powhatan No. 6 Mine (DMR Permit No. D-0360) is located in Belmont County, which is situated in southeastern Ohio. The topography of the entire application area is typical of the Appalachian Plateau Province and is characterized by narrow, rounded ridges and deep, V-shaped valleys dissecting the terrain. Topographic relief within the application area is approximately 460 ft. The elevation varies between 1349 ft in the western portion of the application area to 890 ft. in the northeastern portion, near McMahon Creek.

Williams Creek, located to the south of the application area, a tributary of McMahon Creek, and McMahon Creek are the dominant surface water features in this area. Both streams flow in an easterly direction, and headwaters from both streams occur within this area. McMahon Creek flows to the Ohio River, approximately 12 miles away.

Geologic Setting

The bedrock units that outcrop in the application area belong to the Dunkard Group, which is Upper Pennsylvanian to Permian in age. The rocks consist of the interbedded sandstone, siltstone, shale, mudstone, claystone, fresh- to brackish-water limestone, and coal. The Monongahela Formation (Pennsylvanian) underlies the Dunkard Group and consists of similar rock types. The Pittsburgh (No. 8) Coal seam which is the seam to be mined, marks the bottom of the Monongahela Formation. According to the Ohio Department of Natural Resources, water below 250 ft. beneath the stream bottoms is brackish.

Based on test hole data previously presented in applications to the DMR, plus those to be presented in this application, soft rocks constitute approximately 50 to 80 percent of the rock column. Soft rocks are defined as shale, mudstone, claystone, sandy shale, limey shale, and claystone. The relatively high percentage of soft rocks is significant as these units have very limited primary permeability, tend to deform in a more plastic manner and are more prone to "self-healing" after fracturing. Aquifers in these units normally have low yields, are less susceptible to subsidence fracturing due to mining and, when fractured, tend to close in response to lithostatic pressures or plug with fine-grained sediment and may contain clays that swell when wetted.

In addition, there is great horizontal and vertical variability of the rock units. Rapid facies changes limit the horizontal continuity of the rock units. With the exception of the major coal seams, very few lithologic units are continuous across the panel areas and correlation between test holes is difficult. Horizontal facies changes and corresponding changes in hydrologic properties of the rocks tend to produce localized subsurface flow systems. In addition, laboratory studies of

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core samples from similar rocks indicate that vertical permeability is several orders of magnitude lower than horizontal permeability (Brown, et al., 1971). This condition again results in hydrologically localized flow systems that are not continuous across the application area.

The rocks in the application area are nearly horizontal with a dip of less than one degree to the southeast. Overburden thickness above the No. 8 Coal seam ranges from a low of about 90 ft. at the point where McMahon Creek exits the northeast corner of the application area to nearly 550 ft in the southwestern quadrant of the area.

General Hydrologic Setting

The source of all ground and surface water in the application area is precipitation. Upon reaching the land surface, water that is not part of direct surface runoff or evapotranspiration infiltrates into the subsurface to become part of the ground water flow system or soil moisture. While shallow subsurface water is important to soil moisture and plant growth, there are no identified shallow unconsolidated aquifers in the area.

Within the bedrock system, ground water occurs in primary and secondary openings. Primary openings are pore spaces between sand, silt and clay grains formed at the time of sediment depositions. Primary permeability is the ability of water to move between pore spaces. In this area, primary permeability is very low and limited ground water movement occurs in hard or soft rocks as a result of primary openings (Stoner, 1983; Siplivy, 1992).

Secondary porosity and permeability is formed by fractures or partings in the rock mass. Most usable ground water in the application area occurs in secondary openings and the success of a water well in terms of yield potential is dependent upon the well penetrating a water-filled fracture zone that transmits enough water to the well bore to meet its intended use (Schmitt, et al., 1983; Waite, 1987).

Fractures are not ubiquitous in the area, however, and are not interconnected over large areas. For these reasons, it is very difficult to identify "aquifers" over large areas and the ground water flow system tends to be made up of small, localized fracture controlled entities. While fractures in hard rocks tend to stay open better than fractures in soft rock, the horizontal and vertical variability of even the hard rock units tend to produce hydraulically isolated areas.

In addition, fractures tend to close at increasing depths due to overlying lithostatic pressures, thereby limiting the effective depth of the ground water flow system (Stoner, 1983). This condition is evident throughout the Powhatan No. 6 Mine. The mine, in general, is very dry with even minor amounts of water inflow limited to the low cover areas (generally less than 200 ft.). As discussed above, the overburden thickness in the application area ranges from about 90 ft. to nearly 550 ft., with the 90 ft. being located in the extreme northeastern portion of the area. In this area, mining is expected to be limited to bleeder entries only. Therefore, very little water inflow into the mine is expected. No pumping to remove water from the application area is expected.

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Conclusions

The topography, geology, and the hydrology of the application area is essentially identical to the areas previously permitted at the Powhatan No. 6 Mine. The existing test holes in the application area show the same rock types as in test holes drilled in previously permitted areas, and the water bearing zones in the application area are expected to remain consistent with other areas of the mine. Two or three additional test holes are expected to confirm this belief, and should be adequate to further define the conditions within the application area.

References

Brown, R.L., Parizek, R.R., 1971, "Shallow Ground Water Flow Systems Beneath Strip and Deep Coal Mines at Two Sites," Clearfield, PA, The Pennsylvania State University, Special Report SR-84, 208 p.

Schmidt, R.D. and G.A. Hnell, 1983, "A Fracture Dewatering Approach to Controlling Ground Water Infiltration in Underground Coal Mines," Interim Report of U.S. Bureau of Mines, 55 p.

Siplivy, W.J., 1992, Probable Hydrologic Consequences, The Ohio Valley Coal Company Powhatan No. 6 Mine, Permit Application D-0360-2.

Stoner, T.D., 1983, "Probable Hydrologic Effects of Subsurface Mining," Ground Water Monitoring Review, Vol. 3, No. 1, pp. 128-137.

Waite, B.A., 1987, Probable Hydrologic Consequences, The Ohio Valley Coal Company Powhatan No. 6 Mine, Permit Application R-0360-1.

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**DRILL LOGS, DRILLING INFORMATION, AND ATTACHMENT 13'S
PROPOSED APPLICATION AREA**

FILED 117

MAR 25 1997

**DIVISION OF MINES
AND RECLAMATION**

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ATTACHMENT 13
(GEOLOGY REPORT – Underground Workings)

Applicant Ohio Valley Coal Company Drill Hole # N86-19
 State Plane Coords: X Y Surface Elevation 1055.45

LITHOLOGY	H2O*	THICKNESS	PHYSICAL PROPERTIES
CASING		23.00	
CHIPPED		7.00	
CLAYSTONE		13.50	COMP, EROD
COAL (NO. 11)		2.10	AC, EROD
CLAYSTONE		9.40	COMP, EROD
SHALE		15.00	ALK, COMP, EROD
SANDSTONE		15.00	HARD
SHALE		1.80	COMP, EROD
COAL (NO. 10)		1.50	AC, EROD
CLAYSTONE		7.00	COMP, EROD
CLAYSTONE		7.10	ALK, COMP, EROD
CLAYSTONE		3.00	COMP, EROD
SANDSTONE		5.80	HARD
CLAYSTONE		1.20	COMP, EROD
LIMESTONE		1.60	ALK
CLAYSTONE		1.00	COMP, EROD
LIMESTONE		15.00	ALK
SHALE		6.00	ALK, COMP, EROD
LIMESTONE		4.00	ALK
CLAYSTONE		5.00	ALK, COMP, EROD
LIMESTONE		50.00	ALK, EROD
CLAYSTONE		5.00	COMP, EROD
COAL (NO. 9)		2.75	AC, EROD
SHALE		9.25	ALK, COMP, EROD
SHALE		10.00	COMP, EROD
LIMESTONE		34.80	ALK, EROD
CLAYSTONE		6.50	COMP, EROD
LIMESTONE		1.70	ALK
LIMESTONE		16.00	ALK, EROD
CLAYSTONE		3.30	COMP, EROD
BONE COAL		0.33	AC, EROD
SHALE		0.23	COMP, EROD
ROOF COAL		0.85	AC
SHALE		0.86	COMP, EROD
COAL (NO. 8)		5.10	AC, EROD
SHALE		13.33	ALK, COMP, EROD

Legend:

AC = ACID PRODUCING
 ALK = ALKALINE PRODUCING
 COMP = COMPACTIBLE
 EROD = ERODIBLE

NOTE: HOLE WAS DRILLED PRIOR TO
 REQUIREMENT TO NOTE WATER BEARING
 ZONES OR OBTAINING SAMPLES FOR
 CHEMICAL ANALYSES

ORIGINAL

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THE OHIO VALLEY COAL COMPANY
POWHATAN NO. 6 MINE
PERMIT D-0360
ATTACHMENT 13 FOR TEST HOLE N86-19

STA LANE COORDS.
X -2,431,056.72
Y - 729,033.72
SURF. ELEV = 1055.45

FORMATION	THICKNESS	DEPTH	COMMENT	STRATA ELEV.
CASING	23.00	23.00	CASING	1032.45
CHIPPED	7.00	30.00	S, C, E	1025.45
GRAY CLAYSTONE	13.50	43.50	S, C, E	1011.95
COAL - NO. 11	2.70	45.60	S, C, E, AC	1009.85
GRAY CLAYSTONE	9.40	55.00	S, C, E	1000.45
GREEN SANDY SHALE W/LIMESTONE	15.00	70.00	S, C, E, ALK	985.45
GRAY SANDSTONE	15.00	85.00	H, NC, NE	970.45
GREEN SHALE	1.80	86.80	S, C, E	968.65
COAL - NO. 10	1.50	88.30	S, C, E, AC	967.15
GREEN CLAYSTONE	7.00	95.30	S, C, E	960.15
GRAY LIMY CLAYSTONE	7.10	102.40	S, C, E, ALK	953.05
GREEN CLAYSTONE	3.00	105.40	S, C, E	950.05
GRAY SANDSTONE	5.80	111.20	H, NC, NE	944.25
GREEN CLAYSTONE	1.20	112.40	S, C, E	943.05
LIMESTONE	1.60	114.00	H, NC, NE	941.45
GREEN CLAYSTONE	1.00	115.00	S, C, E	940.45
LIMESTONE W/ SHALE	15.00	130.00	H, NC, E, ALK	925.45
GREEN LIMY SHALE	6.00	136.00	S, C, E, ALK	919.45
LIMESTONE W/SHALE	4.00	140.00	H, NC, E, ALK	915.45
GREEN CLAYSTONE W/ LIME	5.00	145.00	S, C, E, ALK	910.45
LIMESTONE W/SHALE	50.00	195.00	H, NC, E, ALK	860.45
GRAY CLAYSTONE	5.00	200.00	S, C, E	855.45
COAL - NO. 9	2.75	202.75	S, C, E, AC	852.70
GRAY LIMY SHALE	9.25	212.00	S, C, E, ALK	843.45
GRAY SHALE	10.00	222.00	S, C, E	833.45
LIMESTONE W/SHALE	34.80	256.80	H, NC, E, ALK	798.65
GREEN CLAYSTONE	6.50	263.30	S, C, E	792.15
LIMESTONE	1.70	265.00	H, NC, NE, ALK	790.45
LIMESTONE W/SHALE	16.00	281.00	H, NC, E, ALK	774.45
GRAY CLAYSTONE	3.30	284.30	S, C, E	771.15
BONE COAL	0.33	284.63	S, C, E, AC	770.82
GRAY SHALE	0.23	284.86	S, C, E	770.59
COAL	0.85	285.71	S, C, E, AC	769.74
GRAY SHALE	0.86	286.57	S, C, E	768.88
COAL - NO. 8	5.10	291.67	S, C, E, AC	763.78
GRAY LIMY SHALE	13.30	305.00	S, C, E, ALK	750.45

PERCENT SOFT ROCK
PERCENT HARD ROCK

50.90 PERCENT
49.10 PERCENT

S = SOFT ROCK
H = HARD ROCK
C = COMPACTIBLE
NC = NON-COMPACTIBLE
E = ERODIBLE
NE = NON-ERODIBLE
AC = ACIDIC
ALK = ALKALINE

	TOT. S %	PYRITE S %	POT ACIDITY MG/L AS CACO3	NEUT. POT (/1000 TONS)	CACO3 DEF (/1000 TONS)
ROOF					
COAL					
BOTTOM					

ORIGINAL

D0360-7

GEOLOGIST: WILLIAM SIPLIVY

ELEVATION: 1313.34

COORDINATES: N -12,528.11, E -67,045.87

DRILLER: L. J. HUGHES & SONS, INC., DANIEL HAMRICK

TOWNSHIP: SMITH

SURF. OWNER: J. CORBETT

SECTION: 27, NE 1/4

DATE STARTED: 12/3/86

COUNTY: BELMONT

DATE FINISHED: 12/5/86

THICK. (FT)	DESCRIPTION	DEPTH (FT)	ELEV. (FT)
15.00	CASING	15.00	1298.34
15.00	CLAYSTONE, GRAY/BROWN	30.00	1283.34
4.00	SANDSTONE, GRAY/BROWN	34.00	1279.34
1.00	SHALE, GRAY	35.00	1278.34
2.40	SHALE, BLACK	37.40	1275.94
3.60	LIMESTONE	41.00	1272.34
8.00	CLAYSTONE, GRAY	49.00	1264.34
6.00	SANDSTONE, GRAY	55.00	1258.34
10.00	SHALE, GREEN	65.00	1248.34
1.60	LIMESTONE	66.60	1246.74
39.40	CLAYSTONE, RED/GREEN	106.00	1207.34
9.00	CLAYSTONE, GREEN	115.00	1198.34
15.00	CLAYSTONE, GREEN, CALCAREOUS	130.00	1183.34
17.00	CLAYSTONE, GREEN	147.00	1166.34
1.30	LIMESTONE	148.30	1165.04
3.00	CLAYSTONE, GREEN, CALCAREOUS	151.30	1162.04
2.70	LIMESTONE	154.00	1159.34
6.00	SHALE, GREEN, CALCAREOUS	160.00	1153.34
9.00	CLAYSTONE, GREEN	169.00	1144.34
6.00	SHALE, GREEN	175.00	1138.34
1.60	SHALE, GRAY	176.60	1136.74
0.80	SANDSTONE, GRAY	177.40	1135.94
0.90	SHALE, GRAY	178.30	1135.04
0.60	SANDSTONE, GRAY	178.90	1134.44
5.60	SHALE, GRAY	184.50	1128.84
0.30	COAL	184.80	1128.54
2.00	SHALE, GRAY	186.80	1126.54
3.20	LIMESTONE, SHALEY	190.00	1123.34
7.00	CLAYSTONE, GRAY	197.00	1116.34
3.00	SHALE, BLACK, CARBONACEOUS	200.00	1113.34
0.90	SHALE, GRAY	200.90	1112.44
0.60	COAL	201.50	1111.84
7.00	SHALE, GRAY	208.50	1104.84
0.80	COAL (NO. 12)	209.30	1104.04
10.70	SHALE, GREEN, CALCAREOUS	220.00	1093.34
10.00	LIMESTONE, GRAY, CLAYEY	230.00	1083.34
7.00	SANDSTONE, GRAY	237.00	1076.34
8.00	SHALE, GREEN	245.00	1068.34
5.00	CLAYSTONE, GRAY	250.00	1063.34

ORIGINAL

D0360-7

GEOLOGIST: WILLIAM SIPLIVY
ELEVATION: 1055.45
COORDINATES: N - 11509.50, E - 62351.79

DRILLER: L. J. HUGHES & SONS, INC., DANIEL HAMRICK

TOWNSHIP: SMITH
SECTION: 22, SW 1/4
COUNTY: BELMONT

SURF. OWNER: F. EARLIWINE
DATE STARTED: 11/25/86
DATE FINISHED: 12/1/86

THICK. (FT)	DESCRIPTION	DEPTH (FT)	ELEV. (FT)
23.00	CASING	23.00	1032.45
7.00	CHIPPED	30.00	1025.45
13.50	CLAYSTONE, GRAY	43.50	1011.95
2.10	COAL (NO. 11)	45.60	1009.85
9.40	CLAYSTONE, GRAY	55.00	1000.45
15.00	SHALE, GREEN, SANDY, CALCAREOUS	70.00	985.45
15.00	SANDSTONE, GRAY	85.00	970.45
1.80	SHALE, GRAY	86.80	968.65
1.50	COAL (NO. 10)	88.30	967.15
7.00	CLAYSTONE, GREEN	95.30	960.15
7.10	CLAYSTONE, GRAY, CALCAREOUS	102.40	953.05
3.00	CLAYSTONE, GREEN	105.40	950.05
5.80	SANDSTONE, GRAY	111.20	944.25
1.20	CLAYSTONE, GREEN	112.40	943.05
1.60	LIMESTONE	114.00	941.45
1.00	CLAYSTONE, GREEN	115.00	940.45
15.00	LIMESTONE, SHALEY	130.00	925.45
6.00	SHALE, GREEN, CALCAREOUS	136.00	919.45
4.00	LIMESTONE, SHALEY	140.00	915.45
5.00	CLAYSTONE, GREEN, CALCAREOUS	145.00	910.45
50.00	LIMESTONE, SHALEY	195.00	860.45
5.00	CLAYSTONE, GRAY	200.00	855.45
2.75	COAL (NO. 9)	202.75	852.70
9.25	SHALE, GREEN, CALCAREOUS	212.00	843.45
10.00	SHALE, GRAY	222.00	833.45
34.80	LIMESTONE, SHALEY	256.80	798.65
6.50	CLAYSTONE, GREEN	263.30	792.15
1.70	LIMESTONE	265.00	790.45
16.00	LIMESTONE, SHALEY	281.00	774.45
3.30	CLAYSTONE, GRAY	284.30	771.15
0.33	BONE COAL	284.63	770.82
0.23	SHALE, GRAY	284.86	770.59
0.85	ROOF COAL	285.71	769.74
0.86	SHALE, GRAY	286.57	768.88
5.10	COAL (NO. 8)	291.67	763.78
13.33	SHALE, GRAY, CALCAREOUS	305.00	750.45

AMOUNT OF HARD ROCK ABOVE NO. 8 SEAM
HARD ROCK: 84.00 FT (29.3%) OF CORE
SOFT ROCK: 202.57 FT (70.7%) OF CORE

ORIGINAL

00360-7

(Continued)

THICK. (FT)	DESCRIPTION	DEPTH (FT)	ELEV. (FT)
12.00	SHALE, GREEN, CALCAREOUS	262.00	1051.34
4.40	SANDSTONE, GRAY	266.40	1046.94
8.60	SHALE, GREEN, CALCAREOUS	275.00	1038.34
16.00	SHALE, GREEN	291.00	1022.34
22.20	SANDSTONE, GRAY	313.20	1000.14
0.30	SHALE, BLACK	313.50	999.84
0.50	COAL, (NO. 11)	314.00	999.34
1.70	SHALE, GRAY	315.70	997.64
0.10	COAL	315.80	997.54
1.70	SHALE, GRAY	317.50	995.84
2.50	CLAYSTONE, GREEN	320.00	993.34
15.00	CLAYSTONE, GREEN, CALCAREOUS	335.00	978.34
15.00	SHALE, GRAY, SANDY	350.00	963.34
3.40	SHALE, GRAY	353.40	959.94
2.70	COAL, (NO. 10)	356.10	957.24
6.20	SHALE, GRAY	362.30	951.04
4.70	LIMESTONE, SHALEY	367.00	946.34
11.60	CLAYSTONE, GREEN	378.60	934.74
29.00	LIMESTONE, SHALEY	407.60	905.74
3.40	SHALE, GREEN	411.00	902.34
50.80	LIMESTONE, SHALEY	461.80	851.54
3.90	CLAYSTONE, GRAY	465.70	847.64
3.15	COAL (NO. 9)	468.85	844.49
2.15	SHALE, GRAY, CALCAREOUS	471.00	842.34
8.30	LIMESTONE, SHALEY	479.30	834.04
8.50	SHALE, GRAY	487.80	825.54
35.90	LIMESTONE, SHALEY	523.70	789.64
3.40	CLAYSTONE, GREEN	527.10	786.24
2.00	CLAYSTONE, GRAY	529.10	784.24
12.70	LIMESTONE	541.80	771.54
6.20	CLAYSTONE, GREEN, CALCAREOUS	548.00	765.34
2.70	CLAYSTONE, GRAY	550.70	762.64
7.10	COAL (NO. 8)	557.80	755.54
7.20	SHALE, GRAY, CALCAREOUS	565.00	748.34

AMOUNT OF HARD ROCK ABOVE NO. 8 SEAM

HARD ROCK: 137.60 FT. (25.0%) OF CORE

SOFT ROCK: 413.10 FT. (75.0%) OF CORE

ORIGINAL

D0360=7

DIAMOND DRILL HOLE: N92 - 6

ENGINEER: W. J. SIPLIVY

ELEVATION: 1261[±]

COORDINATES: S 8,430.00 W 53,560.00

DRILLER: L. J. HUGHES & SONS, INC., LOWELL RITCHIE

TOWNSHIP: SMITH
SECTION: 10, NW 1/4
COUNTY: BELMONT

SURFACE OWNER: ANTONIA WIERZBICKI
DATE STARTED: JULY 28, 1992
DATE FINISHED: JULY 31, 1992

DESCRIPTION

THICKNESS (Ft.)	DEPTH (Ft.)	STRATA
20.00	20.00	Non-coring
7.00	27.00	Shale, brown w/ Fe-stained joints
14.20	41.20	Claystone, m. gray-red (7' lost)
6.35	47.55	Shale, m. gray w/Fe-stains upper 3'
0.90	48.45	Limestone, l. gray
2.90	51.35	Claystone, m. gray-red
1.00	52.35	Limestone, l. gray
3.60	55.95	Claystone, m. gray w/Fe-stains
4.60	60.55	Claystone, red (2.6' lost)
5.85	66.40	Claystone, m. gray w/Ls nods, Fe-stained
0.50	66.90	Limestone, l. gray
4.45	71.35	Shale, m. gray
1.60	72.95	Shale, m. gray, sandy, Fe-stained upper 0.25'
4.75	77.70	Sandstone, l. gray w/occ. Sh. stks, Fe-stained joints
4.00	81.70	Shale, m. gray
1.60	83.30	Claystone, m. gray-green
1.10	84.40	Limestone, l. gray, Fe-stained
5.00	89.40	Claystone, m. gray-green
0.55	89.95	Limestone, l. gray
1.70	91.65	Claystone, m. gray
1.75	93.40	Limestone, l. gray, Fe-stained
1.50	94.90	Claystone, dk. gray
9.70	104.60	Claystone, m. gray w/Ls nods.
1.70	106.30	Limestone, l. gray, nodular, Fe-stained
2.40	108.70	Shale, m. gray
2.65	111.35	Sandstone, l. gray, Fe-stained
3.50	114.85	Sandstone, l. gray
1.35	116.20	Shale, m. gray, sandy, Fe-stained
1.10	117.30	Sandstone, tan, Fe-stained
0.70	118.00	Shale, m. gray, sandy
0.80	118.80	Sandstone, tan, Fe-stained
1.80	120.60	Shale, m. gray, sandy
3.35	123.95	Shale, dk. gray
0.30	124.25	Bony coal

ORIGINAL

D0360-7

DIAMOND DRILL HOLE: N92 - 6
(Continued)

THICKNESS (Ft.)	DEPTH (Ft.)	STRATA
0.40	124.65	Shale, black, carbonaceous
0.75	125.40	Limestone, l. gray
1.20	126.60	Claystone, m. gray, carb bott 0.2'
1.15	127.75	Limestone, l. gray, Fe-stained
1.10	128.85	Shale, dk. gray, Fe-stained upper 0.2'
0.20	129.05	Limestone, l. gray
2.00	131.05	Claystone, dk. gray
1.25	132.30	Limestone, m. gray, silty
1.60	133.90	Claystone, m. gray w/Ls nods.
1.00	134.90	Shale, black
0.49	135.39	Shale, black w/coal stks.
2.61	138.00	Coal (WASHINGTON No. 12) upper split 1.12 bony coal 0.07 shale 1.42 coal ----- 2.61 total seam
1.40	139.40	Shale, m. gray
0.55	139.95	Shale, m. gray, sandy
5.25	145.20	Shale, m. gray w/Ss stks.
0.61	145.81	Shale, black, carbonaceous
0.99	146.80	Coal, WASHINGTON (No. 12) lower split 0.60 coal 0.13 bone 0.26 coal ----- 0.99 total seam
0.90	147.70	Shale, black
6.15	153.85	Claystone, m. gray
1.15	155.00	Limestone, l. gray, hard
14.20	169.20	Claystone, m. gray w/Ls nods.
8.30	177.50	Shale, m. gray
0.20	177.70	Limestone, l. gray
2.70	180.40	Claystone, m. gray
0.35	180.75	Claystone, black, carbonaceous
2.55	183.30	Claystone, m. gray
3.30	186.60	Limestone, l. gray w/ Cs ptgs.
6.20	192.80	Sandstone, l. gray w/occ. Sh. stks.
2.90	195.70	Shale, m. gray, sandy
2.30	198.00	Sandstone, l. gray
0.45	198.45	Shale, m. gray
1.25	199.70	Sandstone, l. gray w/occ. Sh. stks.
4.15	203.85	Shale, m. gray, sandy
0.40	204.25	Sandstone, l. gray
4.00	208.25	Shale, m. gray, sandy

ORIGINAL

D0360-7

DIAMOND DRILL HOLE: N92 - 6
(Continued)

THICKNESS (Ft.)	DEPTH (Ft.)	STRATA
0.45	208.70	Claystone, dk. gray
5.00	213.70	Claystone, m. gray w/ occ. limestone nodules
6.00	219.70	Sandstone, l. gray
2.30	222.00	Shale, m. gray
0.10	222.10	Shale, black, carbonaceous
1.80	223.90	Claystone, m. gray
0.35	224.25	Limestone, l. gray
1.80	226.05	Claystone, m. gray
3.20	229.25	Shale, m. gray, sandy
1.70	230.95	Claystone, m. gray
0.90	231.85	Shale, m. gray
0.20	232.05	Sandstone, l. gray
1.90	233.95	Shale, m. gray
0.35	234.30	Shale, black, carbonaceous
2.50	236.80	Coal WAYNESBURG (No. 11)
1.22	238.02	Shale, black, carbonaceous
0.08	238.10	Bony coal
11.80	249.90	Claystone, m. gray w/Ls nods.
2.90	252.80	Shale, m. gray, sandy
4.50	257.30	Sandstone, l. gray w/occ. Sh. stks.
4.10	261.40	Shale, m. gray, sandy
25.60	287.00	Sandstone, l. gray, massive texture
1.57	288.57	Shale, black, carbonaceous
0.53	289.10	Coal UNIONTOWN (No. 10)
4.90	294.00	Claystone, m. gray
1.70	295.70	Limestone, l. gray
6.90	302.60	Shale, m. gray, calcareous
4.35	306.95	Sandstone, l. gray
5.10	312.05	Shale, m. gray, sandy
1.75	313.80	Limestone, l. gray
4.25	318.05	Claystone, m. gray w/Ls nods.
3.90	321.95	Limestone, l. gray w/ Cs ptgs.
14.35	336.30	Claystone, m. gray-green w/Ls nods.
3.40	339.70	Shale, m. gray, calcareous
1.25	340.95	Limestone, l. gray
0.70	341.65	Claystone, green
0.40	342.05	Limestone, l. gray
9.10	351.15	Shale, m. gray, calcareous
3.10	354.25	Limestone, l. gray, nodular
1.80	356.05	Shale, m. gray
1.20	357.25	Limestone, l. gray
3.00	360.25	Shale, m. gray, calcareous
2.30	362.55	Limestone, l. gray
3.75	366.30	Shale, m. gray, calcareous
2.50	368.80	Limestone, l. gray
0.90	369.70	Shale, m. gray-green
0.70	370.40	Limestone, l. gray
2.75	373.15	Shale, green

ORIGINAL

D0360-7

DIAMOND DRILL HOLE: N92 - 6
(Continued)

THICKNESS (Ft.)	DEPTH (Ft.)	STRATA
1.60	374.75	Limestone, l. gray
0.90	375.65	Shale, m. gray
3.50	379.15	Limestone, l. gray w/ Cs ptgs.
2.90	382.05	Shale, m. gray, calcareous
1.20	383.25	Flintclay, brown
8.10	391.35	Shale, m. gray
2.65	394.00	Limestone, l. gray w/ Cs ptgs.
1.80	395.80	Shale, m. gray
4.20	400.00	Claystone, dk. gray
3.24	403.24	Coal, SEWICKLEY (No. 9)
		1.17 coal
		0.06 bone coal
		0.28 coal
		0.10 bone
		0.15 shale
		1.48 coal

		3.24 total seam
1.56	404.80	Claystone, m. gray, firm
1.15	405.95	Limestone, l. gray
3.00	408.95	Shale, m. gray
1.50	410.45	Limestone, l. gray
3.65	414.10	Shale, m. gray
7.30	421.40	Shale, m. gray, calcareous w/occ. SS stks.
1.40	422.80	Limestone, m. gray, silty
0.30	423.10	Claystone, m. gray, calcareous
1.15	424.25	Limestone, l. gray
1.25	425.50	Claystone, dk. gray
0.45	425.95	Shale, black, carbonaceous (FISHPOT HORIZON)
7.85	433.80	Limestone, l. gray w/ Cs ptgs.
3.00	436.80	Shale, m. gray, calcareous
2.95	439.75	Limestone, l. gray
1.70	441.45	Claystone, dk. gray-green
3.20	444.65	Limestone, l. gray w/ Cs ptgs.
0.60	445.25	Claystone, green
3.40	448.65	Limestone, l. gray
2.55	451.20	Claystone, dk. gray-green, calcareous
3.50	454.70	Limestone, l. gray
1.95	456.65	Claystone, dk. gray-green
0.65	457.30	Shale, dk. gray
3.40	460.70	Claystone, m. gray
9.15	469.85	Limestone, l. gray
0.40	470.25	Claystone, m. gray
2.90	473.15	Limestone, l. gray
0.40	473.55	Claystone, m. gray
2.50	476.05	Limestone, l. gray
0.55	476.60	Claystone, m. gray
1.80	478.40	Limestone, l. gray, nodular

ORIGINAL

D0360-7

DIAMOND DRILL HOLE: N92 - 6
(Continued)

THICKNESS (Ft.)	DEPTH (Ft.)	STRATA
0.25	478.65	Claystone, m. gray
0.40	479.05	Limestone, m. gray, silty
1.90	480.95	Claystone, m. gray w/Ls nods.
1.80	482.75	Claystone, m. gray
0.25	483.00	Shale, black
0.44	483.44	Claystone, m. gray
0.29	483.73	Shale, black
1.00	484.73	Claystone, m. gray
4.61	489.34	Coal (PITTSBURGH No. 8)
		0.04 bone
		1.56 coal
		0.01 shale
		2.92 coal
		0.08 bone

		4.61 total seam
0.35	489.69	Shale, dk. gray, calcareous, hard
4.65	494.34	Claystone, dk. gray w/Ls nodules

AMOUNT OF SOFT/HARD ROCK ABOVE PITTSBURGH COAL SEAM

1. SOFT ROCK: 336.73' or 69.5% of core.
2. HARD ROCK: 148' or 30.5% of core.

PROJECTED AQUIFERS

1. 20' to 27'.
2. 41.2' to 44.2'.
3. 52.35' to 55.95' (minor).
4. 60.55' to 66.4' (minor).
5. 71.35 to 77.7'.
6. 83.3' to 84.4' (minor).
7. 91.65' to 93.4' (minor).
8. 104.6' to 118.8' (major).
9. 126.6' to 128.85'.

ORIGINAL

D0360-7

GROUNDWATER INFORMATION

Naturally occurring groundwater in this area resides primarily in consolidated (rock) aquifers that are partially or wholly confined and lie within the geologic interval above the Pittsburgh No. 8 Coal.

The rock aquifers are primarily sandstones, limestones and coals, but may also include shales, claystones, and siltstones. All units transmit water primarily by secondary porosity or hydraulic conductivity (joints and other fractures, bedding partings). In general, primary permeabilities are low to very low for these materials. In fact, there are no "aquifers" in the application area. Rather, the ground water is generally limited to the first 50 to 100 ft. of the strata, designated herein as the "Near Surface Saturated Zone." Larger openings in the rock strata saturated zones may be identified by limonitic (iron) stained or alkaline stained rocks in the test holes. The saturated zone is recharged through infiltration and percolation at outcrop zones and in some cases, by vertical flows through discontinuities and locally permeable overlying strata. The stratigraphy identified in the Geology Description section shows numerous lithologic units that are probably capable of transmitting water. However, confining pressures tend to keep lower strata rock discontinuities closed or "tight" so that useful aquifers tend to lie close to the ground surface. Wells penetrating near surface rock aquifers typically exhibit yields of less than one half gallon per minute. The confining pressure is greater in valleys, and well yield tends to be lower in the valleys than on the ridge tops. However, the saturated zones in valleys may extend deeper due to the presence of the local water table, as evidenced by streams located in the valleys.

Numerous aquicludes comprised of claystones, mudstones, underclays, limestones with clay lenses, and some shales and siltstones are interbedded with the more permeable water bearing units. These less permeable strata strongly influence horizontal and vertical water movements. A portion of the springs flowing from valley walls below the ridgelines probably originate in the saturated zone and many can probably be identified as adjacent to (usually above) the less permeable strata.

Groundwater quality data obtained from these rock aquifer springs and the wells generally indicate pH ranges from 6.1 to 9.0, alkalinities in excess of acidities, high hardness, and low metals concentrations.

Wells and springs located within the application area are identified on the Attachment 14 forms included with this application. Their locations are shown on the Application Map.

ORIGINAL

D0360-7



George V. Voinovich • Governor
Donald C. Anderson • Director

DATE April 3, 1997

ANALYSIS OF EXISTING GROUND WATER FILE DATA

PREPARED BY: Bill Haiker *BH*, HYDROGEOLOGIST

OPERATOR: Ohio Valley Coal Company

COUNTY: Belmont

TOWNSHIP: Smith

SECTION (S): 22, 23, 24, 28, 29, 30, 34, 35, and 36

NUMBER OF WATER WELL LOGS WITHIN 1,000 FOOT RADIUS OF SITE (COPIES ATTACHED) 14 : FIELD LOCATED: 5

GENERAL DESCRIPTION OF LOCAL HYDROLOGY: (USE ADDITIONAL SHEET IF NECESSARY)

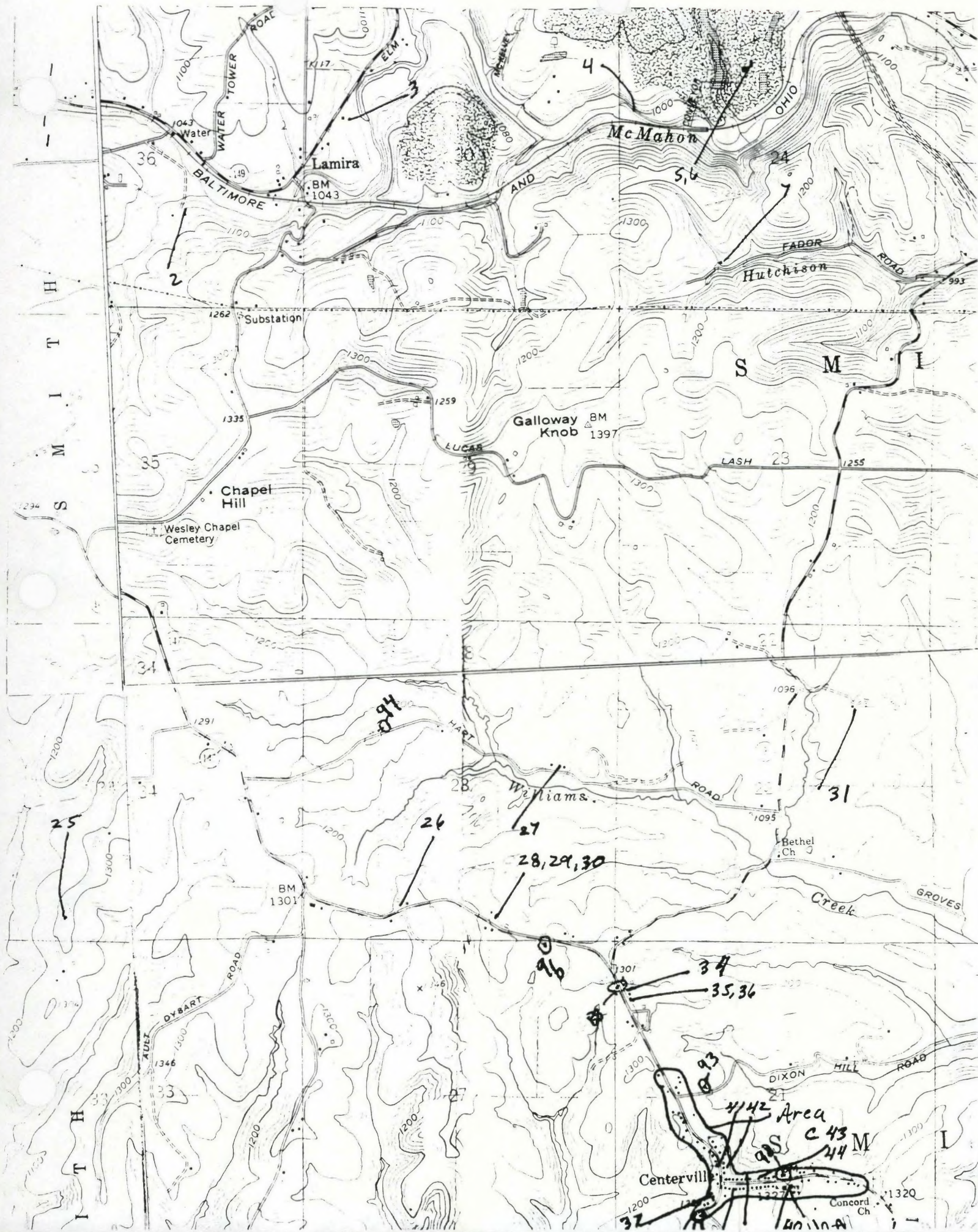
Ground water is generally obtained from interbedded sandstone, shale and limestone bedrock. Well depths range from 40 to 175 feet with initial yields of one to fifteen gallons per minute. Sustained yields are generally less than three gallons per minute.

AREAS OF PARTICULAR CONCERN: (USE ADDITIONAL SHEET IF NECESSARY)

Mining the #8 coal seam at elevations between 767 and 848 feet M.S.L. will most likely adversely affect wells within the permit boundary. All wells should be located and monitored before, during and after mining is completed.

00360-7

ORIGINAL



723694

Permit Number 30

~~SECTION~~ DOT No.
(CIRCLE ONE)

PROPERTY ADDRESS BEAUMONT-CENTERVILLE RD BEAUMONT
(ADDRESS OF WELL LOCATION A)

CONSTRUCTION DETAILS

Pitless Device ☒ Adapter ☐ Preassembled unit
Use of Well SINGLE FAMILY DWELLING
☐ Rotary ☒ Cable ☐ Augered ☐ Driven ☐ Dug ☐ Other
Date of Completion 1-30-92

WELL TEST

☒ Bailing ☐ Pumping* ☐ Other _____
Test rate 5.5 gpm Duration of test _____ hrs
Drawdown 88 _____ ft
Measured from: ☐ top of casing ☒ ground level ☐ Other _____
Static Level (depth to water) 39 ft. Date: 1-30-92
Quality (clear, cloudy, taste, odor) CLEAR NO TASTE NO COLOR

*(Attach a copy of the pumping test record, per section 1521.05, ORC)

From	To
------	----

BROWN SANDY SOIL

0	2
---	---

BROWN SANDSTONE

2	18
---	----

RED LIMESTONE

18	19
----	----

GRAY LIMESTONE MED

14	36
----	----

100' GRAY LIMESTONE

36	38
----	----

MED GRAY LIMESTONE² HD BANDS 39 90

34	40
----	----

PUMP

Type of pump SUBMERSIBLE Capacity 10 gpm
Pump set at 86 ft
Pump installed by DAVE GREEN - GREEN'S WELL DRILLING

SKETCH SHOWING WELL LOCATION

Show distances well lies from numbered state highways, street intersections, county roads, etc.

N

W

F

ORIGINAL
D0360-7

Additional space is needed to complete well log, use next consecutively numbered form.

DNR 7802.90

Drilling Firm GREEN'S WELL DRILLING-

Signed

Address 429 S. MAIN ST

Date _____

City, State, Zip BETHESDA OHIO 43719

ODH Registration Number 1572

Completion of this form is required by section 1521.05, Ohio Revised Code - file within 30 days after completion of drilling.

ORIGINAL COPY TO - ODNR, DIVISION OF WATER, 1939 FOUNTAIN SQ. DRIVE, COLS., OHIO 43224

Blue - Customer's copy Pink - Driller's copy Green - Local Health Dept. copy

TOVCC 21430

WELL LOG AND DRILLING REPORT

ORIGINAL

State of Ohio
DEPARTMENT OF NATURAL RESOURCES
Division of Water
1500 Dublin Road
Columbus, Ohio

No. 221729

County Belmont Township Smith Section of Township 28
Owner Foster Funkhouser Address Warnock Ohio Rd.
Location of property Farm House, on Co. Rd. off Route 9.

CONSTRUCTION DETAILS

Casing diameter 10" Length of casing 20'6"
Type of screen Length of screen
Type of pump
Capacity of pump
Depth of pump setting
Date of completion

BAILING OR PUMPING TEST

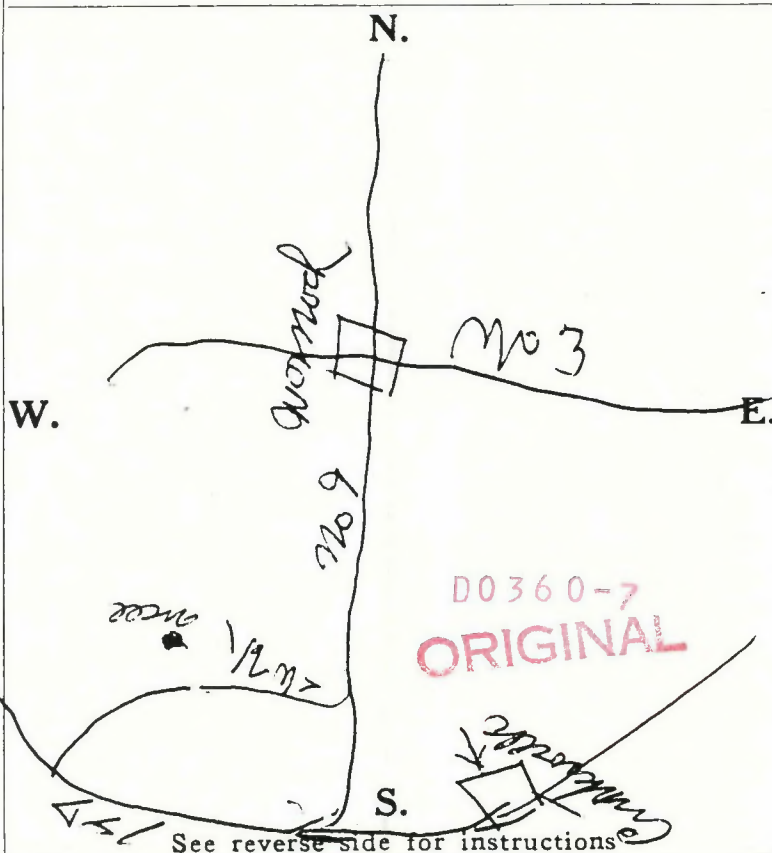
Pumping rate 1 G.P.M. Duration of test hrs.
Drawdown 23 ft. Date
Developed capacity 1 gal per min.
Static level—depth to water 37 ft.
Pump installed by

WELL LOG

Formations Sandstone, shale, limestone, gravel and clay	From	To
Clay	0 Feet	3 Ft.
Sand Rock	3	10
quick sand	10	14
Sand Rock	14	18
gray slate	18	25
Coal Blossom	25	27
gray slate	27	37
Rock	37	39
gray slate	39	51
Rock	51	55
Slate Rock	55	60

SKETCH SHOWING LOCATION

Locate in reference to numbered
State Highways, St. Intersections, County roads, etc.



Drilling Firm McDougal & Wilhelm
Address 106 Taylor Lane
St. Clairsville Ohio

Date 7-23-59
Signed E. W. McDougal
TR 246

TOVCC 21431

WELL LOG AND DRILLING REPORT

ORIGINAL

State of Ohio
DEPARTMENT OF NATURAL RESOURCES
Division of Water
1500 Dublin Road
Columbus, Ohio

No. 185216

County BELMONT Township SMITH Section of TownshipOwner JOHN DELANEY Address BELMONT OHIO RTLocation of property 4 MI NORTH OF ST RT #9

CONSTRUCTION DETAILS

Casing diameter 8 1/4 Length of casing 20

Type of screen Length of screen

Type of pump

Capacity of pump

Depth of pump setting

Date of completion SEPT 26 1956

BAILING OR PUMPING TEST

Pumping rate COULD NOT LOWER G.P.M. Duration of test hrs.

Drawdown ft. Date

Developed capacity

Static level—depth to water ft.

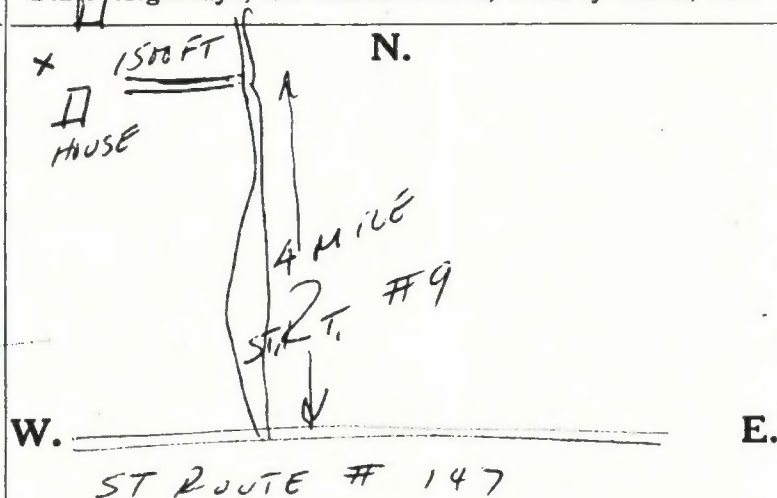
Pump installed by

WELL LOG

Formations Sandstone, shale, limestone, gravel and clay	From	To
CLAY	0 Feet	15 Ft.
SANDSTONE	15	18
CLAY	18	20
SHALE	20	28
SANDSTONE	28	37
SLATE	37	43
SANDSTONE	43	46
SLATE	46	51
COAL	51	52
SLATE	52	58
LIME	58	61
SLATE	61	65
SHALE	65	70
SLATE	70	71

SKETCH SHOWING LOCATION

Locate in reference to numbered State Highways, St. Intersections, County roads, etc.



ORIGINAL

00360-7

S.

See reverse side for instructions

Drilling Firm REISING CO.Date SEPT 28 1956Address 1400 BURG, COSigned Robert H. Reising

31

TOVCC 21432

X 2,431.00
131,500 = 1,000
Y-

WELL LOG AND DRILLING REPORT

ORIGINAL

State of Ohio
OHIO WATER RESOURCES BOARD
Department of Public Works
553 E. Broad St., Columbus 15, Ohio

3
Nº 66524

County BELMONT Township 9 SMITH Section of Township 24 or Lot Number
Owner Stanley Juzwiak Address Box 77 Lamira Ohio
Location of property 1 MILE S.E. OF LAMIRA, OHIO

CONSTRUCTION DETAILS

Casing diameter 8" Length of casing 14'
Type of screen Length of screen
Type of pump
Capacity of pump
Depth of pump setting

PUMPING TEST

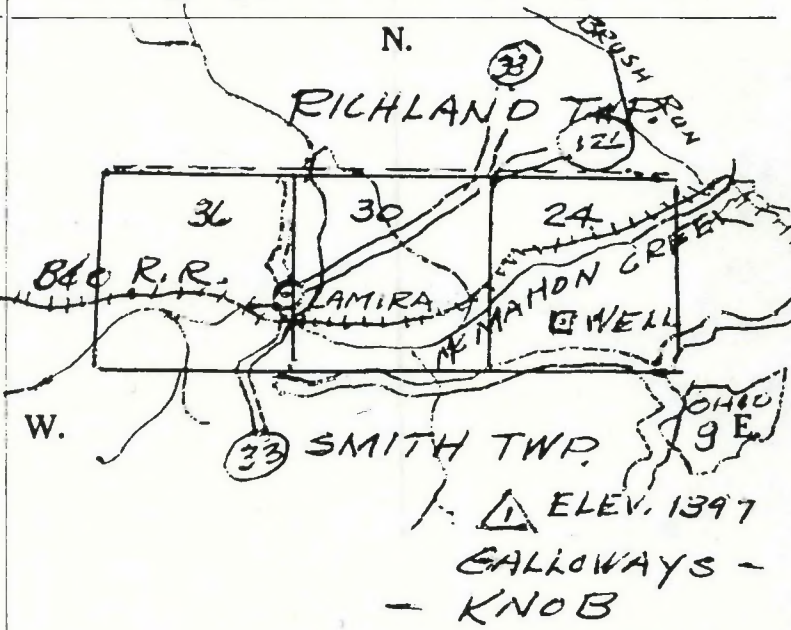
Pumping rate ONE G.P.M. Duration of test hrs.
Drawdown ft. Date
Developed capacity
Static level of completed well 47 ft.
Pump installed by

WELL LOG

Formations Sandstone, shale, limestone, gravel and clay	From	To
CLAY	0 Feet	10 Ft.
SANDSTONE	10	22
SHALE	22	45
SANDSTONE	45	60
LIMESTONE	60	81
SHALE	81	98
SOAPSTONE	98	110
SHALE	110	117
LIMESTONE	117	124
WATER 50'		
" 98'		

SKETCH SHOWING LOCATION

Locate in reference to numbered
State Highways, St. Intersections, County roads, etc.



ORIGINAL
D0360-7

S.
See reverse side for instructions

Drilling Firm
Address

Date 9/5/55
Signed [Signature]
By [Signature] TR 229 M

WELL LOG AND DRILLING REPORT

NO CARBON PAPER
NECESSARY -
SELF-TRANSCRIBING

State of Ohio
DEPARTMENT OF NATURAL RESOURCES
Division of Water
Fountain Square
Columbus, Ohio 43224

611627

PERMIT # 39

COUNTY Delaware TOWNSHIP Smith SECTION OF TOWNSHIP 18
OWNER MARGARET CASE ADDRESS 47722 WARNOCK-WHITEY RD
LOCATION OF PROPERTY WARNOCK-WHITEY RD, S. OFF ST. 9, 1ST HOUSE ON ROAD

CONSTRUCTION DETAILS	BAILING OR PUMPING TEST (Specify one by circling)
Casing diameter <u>8</u> Length of casing <u>33</u>	Test rate <u>2</u> gpm Duration of test <u>6</u> hrs
Type of screen <u> </u> Length of screen <u> </u>	Drawdown <u> </u> ft Date <u> </u>
Type of pump <u>554B JACUZZI SUB</u>	Static level (depth to water) <u>86</u> ft
Capacity of pump <u>6 GPM</u>	Quality (clear, cloudy, taste, odor) <u>SULPHUR CEMENTED</u>
Depth of pump setting <u>130</u>	<u>OUT</u>
Date of completion <u>10-21-85</u>	Pump installed by <u>DUMM DRILLING</u>

WELL LOG*			SKETCH SHOWING LOCATION
Formations: sandstone, shale, limestone, gravel, clay	From	To	Locate in reference to numbered state highways, street intersections, county roads, etc.
TOP SOIL	0 ft	3 ft	
CLAY	3	7	
POOR SANDSTONE	7	12	
YELLOW CLAY	12	18	
BROWN SANDSTONE	18	22	
YELLOW CLAY	22	26	
GRAY CLAY	26	27	
LIMESTONE	27	30	
CRACKY SHALE	30	34	
LIMESTONE	34	40	
GRAY SHALE	40	42	
LIMESTONE	42	47	
GRAY SHALE	47	50	
LIMESTONE	50	56	
GRAY SHALE	56	60	
LIMESTONE	60	63	
GRAY SHALE	63	65	
LIMESTONE	65	70	
GRAY SHALE	70	73	
LIMESTONE	73	77	
GRAY SHALE	77	80	
LIMESTONE	80	85	
GRAY SHALE	85	88	
LIMESTONE	88	91	
GRAY SHALE	91	92	
COAL (water)	92	96	
GRAY SHALE	96	98	
LIMESTONE	98	100	
GRAY SHALE	100	104	
LIMESTONE	104	118	
GRAY SHALE	118	119	
LIMESTONE	119	129	
GRAY SHALE	129	134	
LIMESTONE	134	135	

DRILLING FIRM DUMM DRILLING DATE 10-27-85
ADDRESS P.O. Box 6751 W.H.G. W.V. SIGNED CR

*If additional space is needed to complete well log, use next consecutive numbered form.

ORIGINAL COPY - ODNR, DIVISION OF WATER, FOUNTAIN SQ., COLS., OHIO 43224

TOVCC 21434

Permit Number

LOCATION OF PROPERTY

*If additional space is needed to complete well log, use next consecutively numbered form.

TOVCC 21435

WELL LOG AND DRILLING REPORT

State of Ohio
DEPARTMENT OF NATURAL RESOURCES
Division of Water
1939 Fountain Square Drive
Columbus, Ohio 43224

690032

TYPE OR USE PEN
SELF-TRANSCRIBING
PRESS HARD!

Permit Number 28

COUNTY Belmont TOWNSHIP Smith SECTION OF TOWNSHIP _____
OWNER John Stanford PROPERTY ADDRESS 44619 Ike/Scales
LOCATION OF PROPERTY Lamar Belmont

CONSTRUCTION DETAILS

CASING

Casing Diameter 10 in. Length of Casing 48 ft.
Type: ☐ Steel ☐ Galv. ☒ PVC ☐ Other _____
Joints: ☐ Threaded ☐ Welded ☒ Solvent ☐ Other _____

SCREEN

Type (wire wrapped, louvered, etc.) _____ Material _____
Length _____ ft. Diameter _____ in.
Set between _____ ft. and _____ ft. Slot _____

GROUT

Material: gravel-cement Volume used _____
Method of installation _____
Depth: placed from gravel 48-25 ft. to 25 ft.
☐ Rotary ☐ Cable ☐ Augered ☐ Driven ☐ Dug ☐ Other _____

BAILING OR PUMPING TEST

(specify one by circling)

WELL TEST

Test rate 10 gpm Duration of test _____ hrs.
Drawdown (water level during pumping) _____ ft.
Measured from: ☐ top of casing ☐ ground level ☐ Other _____
Static Level (depth to water) 22 ft. Date: _____
Quality (clear, cloudy, taste, odor) Clear - odorless

PUMP

Type of pump Franklin Sump Capacity 7 gpm
Pump set at 45 ft ft.
Pump installed by Roby Drilling

Pitless Device ☒ Adapter ☐ Preassembled unit

Use of Well domestic

WELL LOG*

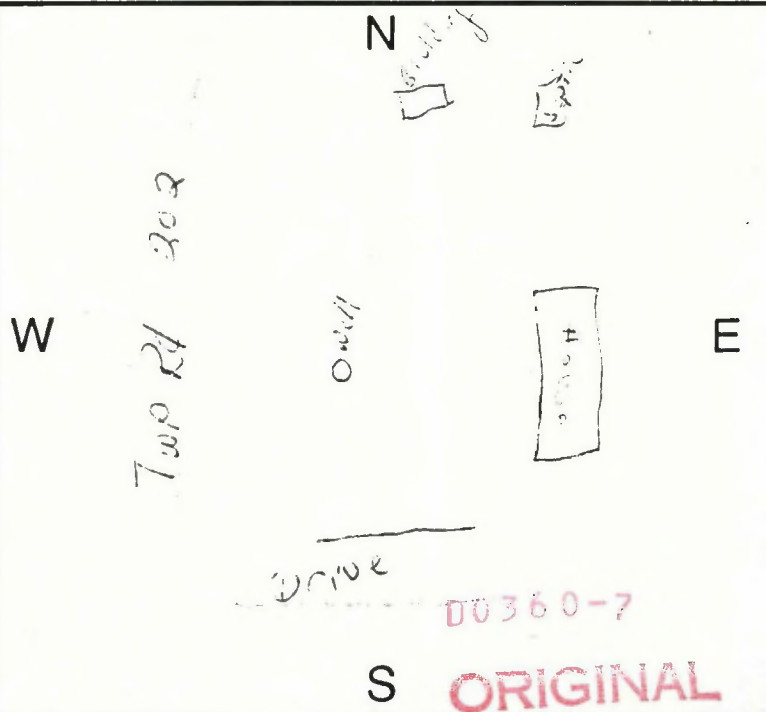
SKETCH SHOWING LOCATION

Show color, texture, hardness, and formation:
sandstone, shale, limestone, gravel, clay, sand

From To

brown topsoil	0 ft	1 ft
brown sticky soil	1	3
red clay	3	7
gray limestone	7	18
Black stone	18	23
sandy stone	23	27
gray limestone	27	40
sandy stone	40	42
gray limestone	42	48

Show distances well lies from numbered
state highways, street intersections, county roads, etc.



* If additional space is needed to complete well log, use next consecutively numbered form.

DNR 7802.88

DRILLING FIRM Roby Drilling
ADDRESS 35470 Hendrysburg
CITY, STATE, ZIP Barnesville Ohio

SIGNED Clyde Roby
DATE _____
ODH REGISTRATION NUMBER 1588

Completion of this form is required by 1521.05, Ohio Revised Code - file within 30 days after completion of drilling.

ORIGINAL COPY - ODNR, DIVISION OF WATER, 1939 FOUNTAIN SQ. DRIVE, COLS., OHIO 43224

Blue - Customer's Copy Pink - Driller's Copy Green - Local Health Dept. Copy

TOVCC 21436

WELL LOG AND DRILL REPORT

State of Ohio
DEPARTMENT OF NATURAL RESOURCES
Division of Water
1939 Fountain Square Drive
Columbus, Ohio 43224

686558

TYPE OR USE PEN
SELF-TRANSCRIBING
PRESS HARD!

Permit Number 35

COUNTY BELMONT TOWNSHIP SMITH SECTION OF TOWNSHIP 36
OWNER DANIEL WISE PROPERTY ADDRESS WARNOCK RD. BELMONT 43718
LOCATION OF PROPERTY 2.5 mi West of Belmont on left side of state route 149

CONSTRUCTION DETAILS	BAILING OR PUMPING TEST (specify one by circling)
CASING Casing Diameter <u>8</u> in. Length of Casing <u>27</u> ft Type: <input type="checkbox"/> Steel <input type="checkbox"/> Galv. <input checked="" type="checkbox"/> PVC <input type="checkbox"/> Other Joints: <input type="checkbox"/> Threaded <input type="checkbox"/> Welded <input checked="" type="checkbox"/> Solvent <input type="checkbox"/> Other	WELL TEST Test rate <u>2</u> gpm Duration of test <u>1</u> hrs. Drawdown (water level during pumping) <u>1.5</u> ft Measured from: <input type="checkbox"/> top of casing <input checked="" type="checkbox"/> ground level <input type="checkbox"/> Other Static Level (depth to water) <u>19</u> ft Date: <u>12/20/88</u> Quality (clear, cloudy, taste, odor) <u>CLOUDY NO ODOR</u>
SCREEN Type (wire wrapped, louvered, etc.) <u>NONE</u> Material Length _____ ft Diameter _____ in. Set between _____ ft and _____ ft Slot _____	PUMP Type of pump _____ Capacity _____ gpm Pump set at _____ ft Pump installed by _____
GROUT Material <u>CEMENT + DRILL MUD</u> Volume used <u>370 lbs</u> Method of installation <u>POUR</u> Depth: placed from <u>25</u> ft to <u>surface</u> ft <input type="checkbox"/> Rotary <input checked="" type="checkbox"/> Cable <input type="checkbox"/> Augered <input type="checkbox"/> Driven <input type="checkbox"/> Dug <input type="checkbox"/> Other	Pitless Device <input checked="" type="checkbox"/> Adapter <input type="checkbox"/> Preassembled unit Use of Well <u>Single-family</u>

WELL LOG*	SKETCH SHOWING LOCATION																																													
<p>Show color, texture, hardness, and formation: sandstone, shale, limestone, gravel, clay, sand</p> <table border="1" style="width:100%"> <thead> <tr> <th></th> <th>From</th> <th>To</th> </tr> </thead> <tbody> <tr><td>BROWN CLAY</td><td>0 ft</td><td>3 ft</td></tr> <tr><td>BROWN SHALE</td><td>3</td><td>18</td></tr> <tr><td>SAND STONE</td><td>18</td><td>19</td></tr> <tr><td>H²O</td><td>19</td><td></td></tr> <tr><td>LIME STONE (DARK)</td><td>19</td><td>24</td></tr> <tr><td>H²O</td><td>24</td><td></td></tr> <tr><td>LIME STONE (LIGHT)</td><td>24</td><td>30</td></tr> <tr><td>LIME STONE (DARK)</td><td>30</td><td>31.5</td></tr> <tr><td>LIME STONE (LIGHT)</td><td>31.5</td><td>45</td></tr> <tr><td>LIME STONE (DARK)</td><td>45</td><td>46</td></tr> <tr><td> </td><td> </td><td> </td></tr> <tr><td> </td><td> </td><td> </td></tr> <tr><td> </td><td> </td><td> </td></tr> <tr><td> </td><td> </td><td> </td></tr> </tbody> </table>		From	To	BROWN CLAY	0 ft	3 ft	BROWN SHALE	3	18	SAND STONE	18	19	H ² O	19		LIME STONE (DARK)	19	24	H ² O	24		LIME STONE (LIGHT)	24	30	LIME STONE (DARK)	30	31.5	LIME STONE (LIGHT)	31.5	45	LIME STONE (DARK)	45	46													<p>Show distances well lies from numbered state highways, street intersections, county roads, etc.</p>
	From	To																																												
BROWN CLAY	0 ft	3 ft																																												
BROWN SHALE	3	18																																												
SAND STONE	18	19																																												
H ² O	19																																													
LIME STONE (DARK)	19	24																																												
H ² O	24																																													
LIME STONE (LIGHT)	24	30																																												
LIME STONE (DARK)	30	31.5																																												
LIME STONE (LIGHT)	31.5	45																																												
LIME STONE (DARK)	45	46																																												

* If additional space is needed to complete well log, use next consecutively numbered form.

DRILLING FIRM GREEN'S WELL DRILLING SIGNED [Signature] DNR 7802.88
 ADDRESS 429 S MAIN ST DATE 12/20/88
 CITY, STATE, ZIP BETHESDA OHIO 43719 ODH REGISTRATION NUMBER 1572

Completion of this form is required by 1521.05, Ohio Revised Code - file within 30 days after completion of drilling.

ORIGINAL COPY - ODNR, DIVISION OF WATER, 1939 FOUNTAIN SQ. DRIVE, COLS., OHIO 43224

TOVCC 21437

Permian #20

COUNTY BELMONT TOWNSHIP SMITH SECTION OF TOWNSHIP # 36
OWNER WAYNE MILHORN ADDRESS 44310 WATER TOWER RD, BELMONT
LOCATION OF PROPERTY 240 HOUSE, 1ST FARM ON LEFT TURN RD #202

CONSTRUCTION DETAILS

Casing diameter 8" Length of casing 18'
Type of screen — Length of screen —
Type of pump —
Capacity of pump —
Depth of pump setting —
Date of completion 2-8-86

BAILING OR PUMPING TEST

(specify one by circling)

Test rate 15 gpm Duration of test 2 hrs
Drawdown _____ ft Date 2-6-86
Static level (depth to water) 24 ft
Quality (clear, cloudy, taste, odor) Good
Pump installed by PTFCORL

WELL LOG*

Formations: sandstone, shale,
limestone, gravel, clay

From

To

Rock Type	0 ft	2 ft
Black Tuff	2	6
Bottom Clay	6	11
Bottom Shale	11	13
Sandstone	13	15
Gray Shale	15	18
Limestone	18	25
Gray Shale (water)	25	27
Limestone	27	34
Gray Shale	34	38
Limestone	38	45
Gray Shale	43	49
Limestone	44	55
Gray Shale	53	59
Gray Shale	59	65
Brick Sandstone	65	68
Blue Clay	68	70
Limestone	70	74

SKETCH SHOWING LOCATION

Locate in reference to numbered
state highways, street intersections, county roads, etc.

A hand-drawn map showing a road network. A main road runs from the top left towards the bottom right, labeled with '#149' and '#202'. A road labeled 'ROOM 15' branches off to the left. Another road labeled 'MEMPHIS' branches off to the right. A road labeled 'B. H. H. H.' is at the bottom. Several buildings are marked with squares: 'House' (two locations), 'Trailer' (two locations), and 'Boat' (one location). A 'Well' is marked with a circle and an arrow pointing to it from a distance of '1,800\''. The map is oriented with 'N' at the top, 'S' at the bottom, 'W' on the left, and 'E' on the right. The text 'DO360-7 ORIGINAL' is at the bottom right.

DRILLING FIRM DUNN DRILLING

DATE 7-8-86

ADDRESS P.O. Box 6755, Vt/Hc, V. Va.

SIGNED _____

*If additional space is needed to complete well log, use next consecutive numbered form.

ORIGINAL COPY - ODNR, DIVISION OF WATER, FOUNTAIN SQ., COLS., OHIO 43224

TOVCC 21438

WELL LOG AND DRILLING REPORT

NO CARBON PAPER
NECESSARY -
SELF-TRANSCRIBING

State of Ohio
DEPARTMENT OF NATURAL RESOURCES
Division of Water
Fountain Square
Columbus, Ohio 43224

611628

PERMIT # 51

COUNTY Belmont TOWNSHIP SMITH SECTION OF TOWNSHIP 36
OWNER MAYNE MILHOAN ADDRESS 44310 WATER TOWER RD
LOCATION OF PROPERTY 1ST PART ON LEFT ON TWP #202 FROM LAND PA

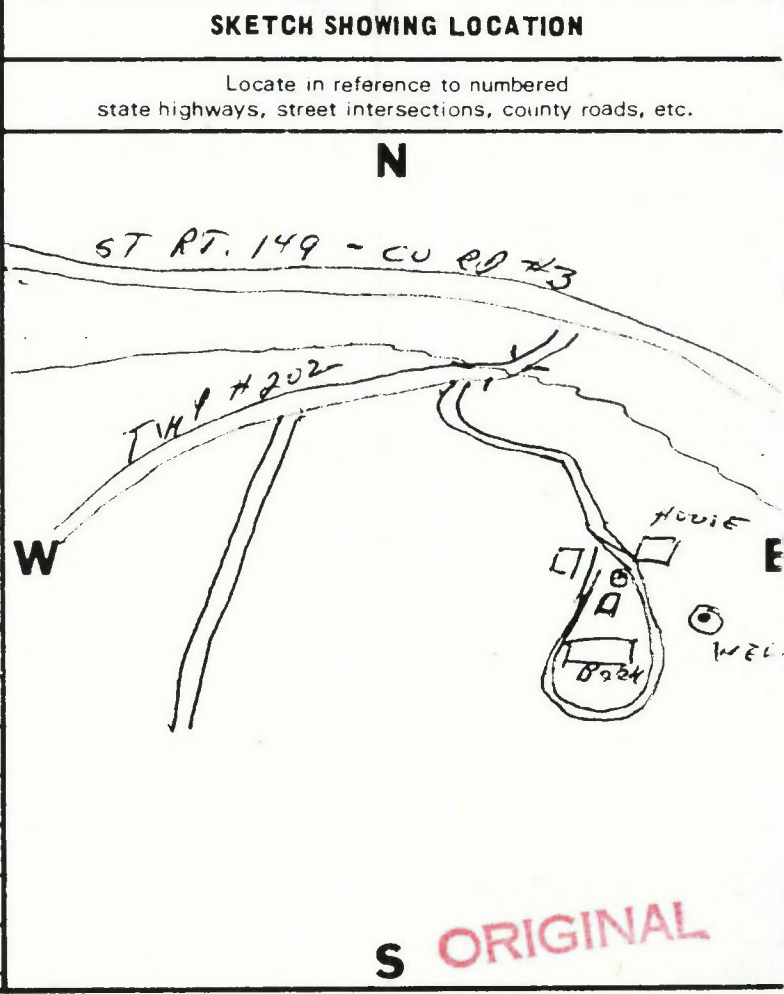
12" HOLE CONSTRUCTION DETAILS 10" CASING

Casing diameter 10 Length of casing 36
Type of screen — Length of screen —
Type of pump OWNER'S
Capacity of pump —
Depth of pump setting 165
Date of completion 11-14-85

BAILING OR PUMPING TEST
(Specify one by circling)

Test rate 9 gpm Duration of test 4 hrs
Drawdown 52 ft Date 11-10-85
Static level (depth to water) 113
Quality (clear, cloudy, taste, odor) GOOD
Pump installed by OWNER

WELL LOG*		
Formations: sandstone, shale, limestone, gravel, clay	From	To
TOPSOIL	0 ft	4 ft
YELLOW CLAY	4	10
YELLOW SHALE	10	14
BROWN SANDSTONE	14	18
SANDSTONE	18	22
YELLOW CLAY	22	24
SANDSTONE	24	28
YELLOW CLAY	28	30
GRAY SHALE	30	34
SANDSTONE	34	37
YELLOW CLAY	37	39
SANDSTONE	39	43
GRAY SHALE (WATER)	43	46
COAL DISSEMINATED	46	47
GRAY SHALE	47	51
COAL	51	55
GRAY SHALE	55	58
LIMESTONE	58	61
GRAY SHALE	61	66
LIMESTONE	66	69
GRAY SHALE	69	74
LIMESTONE	74	80
BLUE CLAY	80	82
GRAY SHALE	82	101
COAL	101	103
LIMESTONE	103	109
GRAY SHALE	109	117
LIMESTONE	117	134
GRAY SHALE (WATER)	134	139
LIMESTONE	139	148
GREEN SHALE	148	150
LIMESTONE	150	154
GRAY SHALE	154	157
LIMESTONE	157	175



DRILLING FIRM DUNE DRILLING DATE 11-27-85
ADDRESS P.O. BOX 6755 W46 WVA SIGNED 1-27-85

*If additional space is needed to complete well log, use next consecutive numbered form.

00360-7

ORIGINAL COPY - ODNR, DIVISION OF WATER, FOUNTAIN SQ., COLS., OHIO 43224

TOVCC 21439

WELL LOG AND DRILLING REPORT

NO CARBON PAPER
NECESSARY -
SELF-TRANSCRIBING

State of Ohio
DEPARTMENT OF NATURAL RESOURCES
Division of Water
Fountain Square
Columbus, Ohio 43224

622293

COUNTY BEAUMONT TOWNSHIP SMITH SECTION OF TOWNSHIP 29
OWNER MARION HUGHES ADDRESS 117 HAYDEN AVE, COLUMBUS
LOCATION OF PROPERTY TR238 LAMIRA OHIO

CONSTRUCTION DETAILS

Casing diameter 8" ^{10" HOLE} Length of casing 24'
Type of screen N/A Length of screen _____
Type of pump 1/2 HP SUBMERSIBLE
Capacity of pump 7 GPM
Depth of pump setting 92'
Date of completion 3-22-84

BAILING OR PUMPING TEST

(specify one by circling)

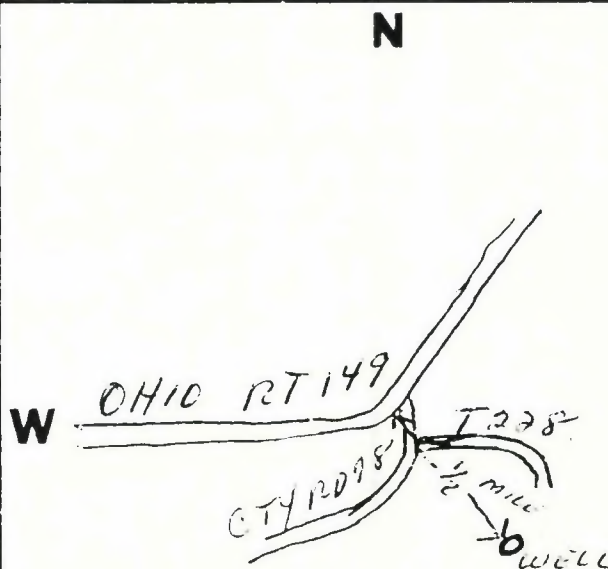
Test rate 2 1/2 gpm Duration of test 2 hr
Drawdown 83 ft Date 3-17-84
Static level (depth to water) 52 ft
Quality (clear, cloudy, taste, odor) _____
Pump installed by PARKHURST WELL SERVICE

WELL LOG*

Formations: sandstone, shale, limestone, gravel, clay	From	To
<u>CLAY</u>	<u>0 ft</u>	<u>12 ft</u>
<u>SHALE, GRAY</u>	<u>12</u>	<u>24</u>
<u>SANDSTONE</u>	<u>24</u>	<u>38</u>
<u>LIMESTONE</u>	<u>38</u>	<u>47</u>
<u>SHALE, GRAY</u>	<u>47</u>	<u>56</u>
<u>LIMESTONE</u>	<u>56</u>	<u>73</u>
<u>SANDSTONE</u>	<u>73</u>	<u>97</u>

SKETCH SHOWING LOCATION

Locate in reference to numbered state highways, street intersections, county roads, etc.



D0360-7

S

ORIGINAL

DRILLING FIRM PARKHURST WELL SERVICE DATE 3-22-84
ADDRESS BARNEVILLE, OHIO SIGNED Albert Parkhurst

*If additional space is needed to complete well log, use next consecutive numbered form.

ORIGINAL COPY - ODNR, DIVISION OF WATER, FOUNTAIN SQ., COLS., OHIO 43224

TOVCC 21440

WELL LOG AND DRILLING REPORT

ORIGINAL

X = 2,428,000

± 3,000'

State of Ohio

DEPARTMENT OF NATURAL RESOURCES

Division of Water

Columbus, Ohio

No 142977

County

Township

Section of Township
or Lot Number

Owner

Address

Location of property

CONSTRUCTION DETAILS

Casing diameter 7 Length of casing 21

Type of screen Length of screen

Type of pump

Capacity of pump

Depth of pump setting

PUMPING TEST

Pumping rate 3 1/2 G.P.M. Duration of test 3 hrs

Drawdown ft. Date Nov 18, 1955

Developed capacity

Static level—depth to water 2.5 ft

Pump installed by owner

WELL LOG

SKETCH SHOWING LOCATION

Formations
Sandstone, shale, limestone,
gravel and clay

From

To

0 Feet

5 Ft.

Top soil
blue shale
lime sandstone
white shale5 18
18 30
30 60Locate in reference to numbered
State Highways, St. Intersections, County roads, etc.

N.

W.

E.

D0360-7

ORIGINAL

S.

See reverse side for instructions

Drilling Firm

Date

Address

Signed

TOVCC 21441

WELL LOG AND DRILLING PORT

State of Ohio
DEPARTMENT OF NATURAL RESOURCES
Division of Water
Columbus, Ohio

Nº 142987

County Belmont Township Smith Section of Township or Lot Number 30

Owner Wallace Ramsey Address Lamira

Location of property in Lamira

CONSTRUCTION DETAILS

Casing diameter 10 Length of casing 18 1/2
Type of screen — Length of screen —
Type of pump —
Capacity of pump —
Depth of pump setting —

PUMPING TEST

Pumping rate 6 G.P.M. Duration of test 3 hrs
Drawdown — ft. Date Jan 10, 1956
Developed capacity —
Static level—depth to water 2.2 ft
Pump installed by owner

WELL LOG

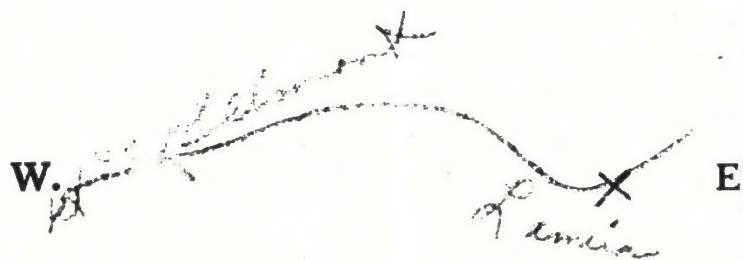
Formations Sandstone, shale, limestone, gravel and clay	From	To
top soil	0 Feet	5 Ft.
lime shale	5	15
limestone	15	18
dark shale	18	30
limestone	30	61

1
22 ft

SKETCH SHOWING LOCATION

Locate in reference to numbered
State Highways, St. Intersections, County roads, etc.

N.



D0360-7

ORIGINAL

S.

See reverse side for instructions

Drilling Firm E. G. Warwick

Date Jan 10, 1956

Address Barnesville, OH

Signed Glenn Warwick

52147

WELL LOG AND DRILLING REPORT

ORIGINAL

State of Ohio
DEPARTMENT OF NATURAL RESOURCES
Division of Water
1500 Dublin Road
Columbus, Ohio

No. 196507

County Belmont Township Smith Section of Township 35
Owner Bert Orasley Address Belmont, Ohio R.F.D.
Location of property 3 miles south of Belmont on 147

CONSTRUCTION DETAILS

Casing diameter 8" Length of casing 20 ft
Type of screen Length of screen
Type of pump
Capacity of pump
Depth of pump setting
Date of completion May 1, 1957

BAILING OR PUMPING TEST

Pumping rate 10 G.P.M. Duration of test 3 hrs.
Drawdown ft. Date May 1, 1957
Developed capacity
Static level—depth to water 40 ft.
Pump installed by

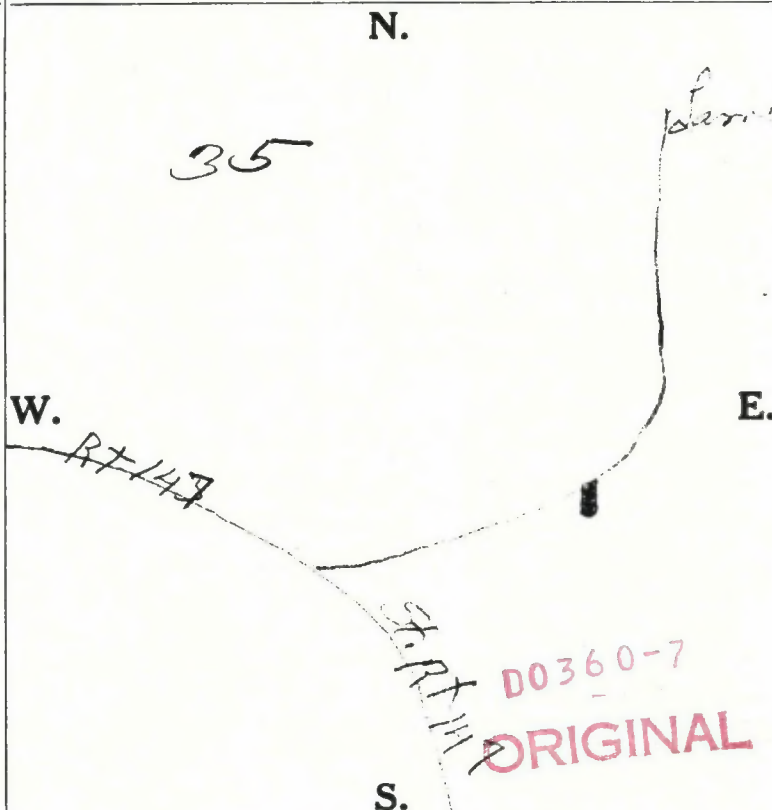
WELL LOG

Formations Sandstone, shale, limestone, gravel and clay	From	To
<u>Sandrock</u>	<u>0 Feet</u>	<u>17 Ft.</u>
<u>Gray shale</u>	<u>17</u>	<u>30</u>
<u>Sandrock</u>	<u>30</u>	<u>40</u>
<u>Gray shale</u>	<u>40</u>	<u>55</u>
<u>Sandrock</u>	<u>55</u>	<u>70</u>

Hit water 40 ft.

SKETCH SHOWING LOCATION

Locate in reference to numbered
State Highways, St. Intersections, County roads, etc.



See reverse side for instructions

Drilling Firm E. J. Swarrick & Son Date May 15, 1957
Address Barnesville, Ohio Signed E. J. Swarrick

PRECIPITATION RECORD FOR USE WITH YOUR

Twyler 11" CLEAR-VU RAIN G.

Tradec, Inc.

LOCATION

Ohio

STATE

West Virginia

TIME OF OBSERVATION

8:30 AM

YEAR 1990

ADDENDUM TO PAGE 19, PART 2, D(3)

	Jan.	Feb.	March	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Remarks
1	0.01	0.16	0.00	0.69	0.00	0.00	0.00	0.00	0.40	0.00	0.00	0.00	s - melted snow
2	Trace	0.10	0.00	0.10	0.00	0.13	0.00	0.00	0.00	0.00	0.00	0.54	
3	0.10	0.70	0.00	0.07	0.12	0.13	0.00	0.00	0.00	0.00	0.00	0.15	
4	0.16	0.35	0.00	0.05	0.43	0.00	0.00	0.00	0.00	0.00	0.37	0.00	
5	0.00	0.00	0.00	0.12	0.30	0.00	0.19	0.05	0.20	0.00	0.53	0.00	
6	0.00	Trace	0.00	0.25	0.00	0.43	0.00	0.00	0.83	0.00	0.00	0.00	
7	0.00	0.10	0.00	0.06	0.00	0.00	0.00	0.00	1.25	0.00	Trace	0.00	
8	0.00	0.00	0.00	0.00	0.00	0.00	0.15	0.00	0.20	0.00	0.00	0.00	
9	Trace	0.60	0.08	Trace	0.04	0.38	0.47	0.70	0.91	0.05	0.28	0.00	
10	0.00	0.00	0.00	0.90	0.22	0.00	0.27	0.00	0.00	0.00	0.00	0.00	
11	0.04	0.15	0.07	0.16	0.00	0.00	2.33	0.00	0.00	0.32	0.00	0.00	
12	Trace	0.00	0.00	0.00	0.25	0.00	0.22	0.00	0.00	0.00	0.00	0.00	
13	0.00	0.04	0.00	0.17	0.21	0.00	0.77	0.20	0.00	0.00	0.00	0.00	
14	0.01	0.54	0.00	0.30	0.00	0.95	0.17	0.00	0.71	0.00	0.00	0.10	
15	0.09	0.41	0.00	0.00	0.05	0.00	0.13	0.00	0.00	0.00	0.00	0.61	
16	0.00	0.06	0.80	0.01	1.12	0.00	0.00	0.00	0.21	0.00	0.40	0.00	
17	0.12	0.00	0.00	0.09	0.00	0.55	0.00	0.00	0.00	0.00	0.00	0.79	
18	0.00	0.00	Trace	0.00	0.00	0.00	Trace	0.00	0.00	0.00	0.00	0.93	
19	0.08	0.00	0.25	Trace	0.15	0.00	0.00	1.45	0.40	0.50	0.00	0.00	
20	0.93	0.00	0.00	0.30	0.15	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
21	0.03	0.00	0.00	0.04	0.00	0.02	0.27	0.00	0.11	0.00	0.00	0.00	
22	0.00	0.12	0.00	0.00	0.00	0.18	0.74	0.20	0.00	0.00	0.53	0.15	
23	0.09	0.14	0.20	0.00	0.00	0.06	0.02	0.40	0.27	0.40	0.00	0.44	
24	0.01	0.06	0.00	0.00	0.00	0.69	0.00	0.00	0.00	0.20	0.00	0.02	
25	0.09	0.00	0.00	0.16	1.12	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
26	0.07	0.00	0.00	0.00	0.81	0.00	0.00	0.00	0.00	0.00	0.00	0.09	
27	0.00	0.10	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.02	0.13	
28	0.40	0.00	0.00	0.00	1.08	0.16	0.00	0.00	0.00	0.00	0.00	0.00	
29	0.74	-	0.02	0.00	0.39	0.00	0.00	0.18	0.53	0.00	0.00	0.09	
30	1.00	-	0.00	0.00	0.00	0.00	0.00	0.00	0.12	0.00	0.00	1.40	
31	1.00	-	0.21	-	0.00	-	0.00	0.00	-	0.00	-	0.00	
Total	2.27	3.63	1.78	3.46	5.84	3.94	6.29	3.18	6.03	1.94	2.45	5.41	

BYRON TAYLOR

Total Annual 46.72

ORIGINAL

D0360-7

PRECIPITATION RECORD FOR USE WITH YOUR

Taylor 11" CLEAR-VU RAIN

LOCATION

TraDet, Inc.

COUNTY

Ohio

STATE

West Virginia

TIME OF OBSERVATION

YEAR 1991

ADDENDUM TO PAGE 19, PART 2, D(3)

	Jan.	Feb.	March	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Remarks
1	0.00	0.00	0.05 ^s	0.00	0.11	0.00	0.40						s - melted snow
2	0.00	0.00	0.02 ^s	0.00	0.00	0.00	0.20						
3	0.00	0.00	0.67	0.00	0.00	0.00	0.00						
4	0.02	0.00	0.00	0.00	0.00	0.00	0.84						
5	0.15	0.31	0.00	0.13	0.93	0.00	0.00						
6	0.00	0.30	0.65	0.00	0.08	0.00	0.00						
7	0.18	0.02	0.00	0.00	0.00	0.00	1.18						
8	0.18	0.00	0.00	0.09	0.00	0.00	0.19						
9	0.02	0.00	0.01	0.55	0.00	0.00	0.00						
10	0.49	0.01	Trace	0.00	0.00	0.00							
11	Trace	0.00	0.00	0.00	0.10	1.63							
12	0.00	0.00	0.12	Trace	0.00	0.00							
13	Trace	0.22	0.25	0.86	0.10	0.00							
14	Trace	0.29	0.00	0.24	0.00	0.00							
15	0.36	0.04	0.00	0.00	0.00	0.00							
16	0.19	0.06 ^s	0.00	0.00	0.00	0.25							
17	0.01	0.05	0.09	0.10	0.02	0.00							
18	0.00	0.00	0.19	0.00	0.00	0.00							
19	Trace	0.20	0.00	0.05	0.00	0.00							
20	0.28 ^s	0.00	0.01	0.00	0.00	0.00							
21	0.02 ^s	0.00	0.00	0.02	0.00	0.00							
22	0.00	0.00	0.03	0.02	0.00	0.00							
23	0.00	0.00	0.02	0.00	0.00	0.00							
24	0.01 ^s	0.00	0.11	0.02	0.00	0.00							
25	0.00	0.00	0.16	0.00	0.00	0.00							
26	0.01 ^s	0.11 ^s	0.14	0.00	Trace	0.00							
27	0.30 ^s	Trace ^s	0.02	0.00	0.07	0.00							
28	0.00	0.00	0.00	0.07	0.07	0.00							
29	0.40	-	0.00	0.13	0.00	0.00							
30	0.17	-	0.05 ^s	0.00	0.65	0.25							
31	0.01 ^s	-	0.04	-	0.04	-							
Total	2.74	1.51	2.63	2.18	1.97	2.13							

SYBRON Taylor

Total Annual

ORIGINAL

D0360-7

TOVCC 21445

Location No. 61 NEYear 1990

DATE	JAN.	FEB.	MAR.	APR.	MAY	JUNE	JULY	AUG.	SEPT.	OCT.	NOV.	DEC.
1	↑	↑	↑	↑	↑	0	0.20	0	0.15	0	0	0
2						0	0.50	0	0	0	0	0.40
3						0	0	0	0	0	0	1.90
4						0	0	0.30	0	TRACE	0	TRACE ^{ms}
5						0	0.25	0	0.50	0	0	TRACE ^{ms}
6						0	0.25	0	0	0	0	0
7						0	0.25	0	0	0	0	0
8					Δ	0	0	0	0	0	0	0
9					W	0	0	0.38	0	0	0	0.10
10					Δ	0	0	0.10	0.95	0	0	0.25
11	A	A	A	A	R	0	0	0	0.20	.20	.40	0
12	W	W	W	W	0	0.30	0	0	0	.25	0	0
13	A	A	A	A	U	0	0.10	0	0	.05	.40 ^{ms}	0
14	R	R	R	R	W	0	0	0	0	0	TRACE	0
15	0	0	0	0	R	0	0	0	0	.25	0	1.00
16	U	U	U	U		0	0	0	0	0	0.05	0.30 ^{ms}
17	W	W	W	W	T	1.00	0	0.50	0	0	0	0
18	R	R	R	R	0	0	0	0	0	0	0	TRACE ^{ms}
19					N	0.10	0	0	0.20	0	0	0
20	L	L	L	L	I	0	0	1.80	0	0	0.22	0
21	0	0	0	0	↓	0	0	0.10	0	0	0.10	0
22	N	N	N	N	0	0	0	0	0	0	0.40	0
23					0	0	0.30	0	0.23	0	1.00	0.40
24					0	0	0.40	0	TRACE	0	0	0
25					0	0	TRACE	0	1.40	0	0	0
26					0	0	0	0	0.10	TRACE	0	0
27					0	0	0	0	0	0	0	TRACE
28					0.10	0	0	0	0	0	0	0
29		↓			0.10	0	0	0	0	0	0	0
30		X		↓	0	0	1.50	0	0	0	0	0.50
31	↓	X	↓	X	0.10	X	0.15	0	X	0	X	0
Total						1.40	3.90	3.18	3.73	0.75	2.57	4.85

D0360-7

TOTAL FOR YEAR

JAN 30 1998

TOVCC 21446

THE OHIO VALLEY C. COMPANY
POWHATAN NO. 6 MINE
RAINFALL RECORD - 1993

	MONTH											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
1	0.01	T	0.00	0.20	0.00	0.00	1.00	0.42	0.00	0.00	0.00	0.00
2	0.56	0.00	0.00	0.03	T	0.29	0.10	1.03	0.00	0.47	T	0.13
3	0.02	0.00	0.40	0.00	0.00	0.17	0.47	0.00	1.99	0.00	0.10	0.00
4	0.63	0.00	1.45	0.00	0.16	0.50	0.46	0.01	0.00	0.00	0.05	0.79
5	0.01	0.00	0.13	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
6	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	T	0.01
7	T	0.00	0.04	0.00	0.00	0.86	0.00	0.00	0.00	0.00	T	0.00
8	T	0.00	0.10	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
9	0.02	0.00	0.08	0.05	0.00	0.12	0.00	0.00	0.85	0.30	0.00	0.10
10	0.15	0.00	0.51	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.15
11	0.19	0.39	0.00	0.06	0.00	0.00	0.31	0.00	0.00	T	0.00	T
12	0.00	0.00	0.00	0.06	0.49	0.00	T	0.00	0.00	0.00	0.00	0.00
13	0.39	0.20	0.40	0.00	T	0.00	0.00	0.00	0.00	0.00	0.90	0.00
14	T	0.01	0.00	0.07	0.00	0.00	0.16	0.00	0.00	0.00	0.40	0.00
15	0.00	0.40	0.00	0.30	0.04	0.00	0.00	0.00	0.21	0.00	T	0.01
16	0.00	0.50	0.20	0.00	0.06	0.00	0.00	1.61	0.00	0.90	T	0.00
17	0.00	0.00	0.12	0.00	0.00	0.00	0.00	0.00	T	0.01	0.80	0.00
18	0.00	0.00	0.00	0.00	0.10	0.30	0.18	0.00	0.00	0.00	0.00	0.16
19	0.00	0.00	0.01	0.01	T	0.00	0.66	0.00	0.00	0.55	0.00	0.00
20	T	0.00	0.38	0.01	T	0.14	0.00	0.00	T	0.39	0.00	0.41
21	0.70	0.73	0.00	0.03	T	0.78	0.00	0.00	0.50	0.00	0.00	0.03
22	0.05	0.06	0.00	0.00	0.00	0.00	0.00	0.00	0.02	0.00	0.00	0.10
23	0.00	0.02	0.49	0.00	0.08	0.00	0.00	0.00	0.06	0.00	0.00	0.00
24	0.50	0.00	0.02	0.00	0.14	0.00	0.00	0.00	0.00	0.00	0.00	0.10
25	0.00	0.15	0.00	2.20	0.00	0.72	0.00	0.00	0.25	0.00	0.00	0.10
26	0.00	T	0.00	0.10	0.00	0.10	0.31	0.00	0.75	0.00	0.16	0.00
27	0.00	0.00	0.25	0.00	0.00	0.00	0.00	0.00	0.10	0.00	0.62	0.00
28	0.00	0.00	T	0.00	0.13	0.39	0.35	0.00	0.10	0.00	T	0.00
29	0.00		0.00	0.00	0.00	0.00	0.00	0.00	T	T	0.00	0.00
30	0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.09	0.00	0.04
31	0.00		0.38		0.65		0.00	T		1.50		0.06
TOT.	3.23	2.46	4.96	3.12	1.85	4.37	4.00	3.07	4.83	4.21	3.03	2.19

T = TRACE

ANNUAL TOTAL: 41.32

D0360-7

ORIGINAL

JAN 30 1998

TOVCC 21447

THE OHIO VALLEY COAL COMPANY
POWHATAN NO. 6 MINE
RAINFALL RECORD - 1994

		MONTH											
		JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
D A T E	1	0.00	0.00	0.04	0.00	0.00	0.00	0.00	0.00	0.00	0.30	0.10	0.00
	2	0.00	0.00	0.90	0.00	0.00	0.00	0.00	0.02	0.00	0.00	0.00	0.00
	3	0.00	T	T	0.10	0.05	0.00	0.00	T	0.00	0.00	0.00	0.00
	4	1.10	0.00	0.00	0.00	0.00	0.00	0.00	1.46	0.00	0.00	0.00	0.90
	5	0.10	0.00	0.00	0.00	0.00	0.00	0.00	0.17	0.00	0.00	0.00	0.06
	6	0.28	0.00	0.00	0.70	0.20	0.00	0.83	0.00	0.00	0.00	T	0.01
	7	0.14	0.00	0.19	0.00	0.83	0.00	0.01	0.00	0.00	0.00	0.00	0.04
	8	0.00	0.81	0.00	0.00	T	0.00	0.00	0.00	0.00	T	0.59	0.00
	9	0.00	T	1.20	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.44
	10	0.00	0.00	T	1.38	0.00	0.00	T	0.00	T	0.00	0.00	0.61
	11	0.30	T	0.00	0.11	0.30	0.90	0.00	T	0.00	0.00	0.00	T
	12	0.01	0.00	0.00	0.50	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	13	T	0.01	0.20	T	0.00	0.00	0.04	0.00	0.00	0.04	0.00	0.00
	14	0.04	0.00	0.00	0.00	0.00	0.00	1.36	0.61	0.00	0.00	0.00	0.00
	15	T	0.00	0.10	0.95	0.60	0.00	0.30	0.00	T	0.00	0.60	0.00
	16	0.00	0.00	0.00	0.00	0.00	0.19	0.00	0.00	0.00	0.00	0.16	0.00
	17	0.86	0.00	0.02	0.00	0.00	0.00	0.00	0.44	2.30	0.00	0.00	0.00
	18	0.00	0.00	0.36	0.00	0.00	0.00	0.00	0.00	0.00	T	0.00	0.03
	19	0.10	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.10	0.00	0.00
	20	0.00	0.00	0.30	0.00	0.00	0.14	0.00	0.00	0.00	0.00	0.33	0.00
	21	0.00	0.39	0.68	0.00	0.00	0.62	0.17	0.00	0.00	0.00	0.00	0.00
	22	0.00	0.63	0.00	0.00	0.00	0.00	0.20	2.69	0.00	0.00	0.00	0.00
	23	0.01	0.65	0.19	0.00	0.00	0.09	0.00	0.00	0.00	T	0.00	0.00
	24	0.01	0.02	0.00	0.00	T	0.50	0.00	0.00	0.00	0.01	0.00	0.00
	25	0.46	0.00	0.00	0.00	0.36	0.00	0.40	0.00	0.82	0.00	0.00	0.00
	26	0.00	0.00	0.05	0.00	T	1.19	0.00	0.02	T	0.00	0.00	0.00
	27	1.89	0.00	0.90	0.00	0.00	T	0.01	0.00	0.00	0.00	0.00	0.00
	28	0.08	T	0.18	T	0.00	0.29	0.00	0.41	0.00	0.00	0.95	0.00
	29	0.00		0.00	0.04	0.00	0.25	0.36	T	0.00	0.00	0.00	0.00
	30	T		0.00	0.30	0.00	0.00	0.00	0.00	0.00	T	0.00	0.00
	31	0.01		0.00		T		0.00	0.46		0.71		0.00
TOT.		5.39	2.51	5.31	4.08	2.34	4.17	3.68	6.28	3.12	1.16	2.73	2.09
T = TRACE		ANNUAL TOTAL: 42.86											

D0360-7

ORIGINAL

JAN 30 1998

TOVCC 21448

THE OHIO VALLEY COAL COMPANY
POWHATAN NO. 6 MINE
RAINFALL RECORD - 1995

MONTH

DATE	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
1	0.19	0.03	0.00	0.00	0.70	0.36	0.00	0.00	0.00	0.00	0.29	0
2	T	0.00	0.00	0.00	0.39	0.09	0.00	0.00	0.00	0.00	0.08	0.01
3	0.00	0.40	0.00	0.22	0.00	0.75	0.00	0.00	0.00	0.60	0.00	0.09
4	0.00	T	0.00	0.00	0.20	0.00	0.00	0.09	0.00	0.14	0.00	0
5	0.00	T	0.38	0.00	0.07	0.00	0.10	1.05	0.00	1.00	0.00	0.01
6	0.00	0.00	0.00	0.05	0.00	0.00	0.00	T	0.00	0.12	0.00	0
7	T	0.00	0.30	0.00	0.00	0.38	0.01	0.00	0.00	0.00	0.34	0
8	T	0.00	0.22	0.10	0.00	0.00	0.00	0.00	0.08	0.00	0.02	0
9	T	0.00	0.00	0.99	0.00	0.00	0.00	T	0.01	0.00	0.00	T
10	T	0.00	0.00	0.29	0.68	0.50	0.00	0.00	0.00	0.00	0.40	T
11	0.10	0.00	0.00	0.00	T	0.44	0.00	1.09	0.00	0.00	0.40	0.03
12	T	T	0.00	0.07	0.00	0.01	0.00	0.00	0.70	0.00	0.10	0.09
13	T	0.00	0.00	0.01	0.00	0.00	T	0.00	0.20	0.00	0.09	0.13
14	0.00	0.10	0.00	0.00	0.60	T	0.00	0.00	0.00	2.01	0.29	0.06
15	0.62	0.70	0.00	0.00	0.00	0.00	T	0.00	0.00	0.00	0.05	0
16	T	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.40	0.00	0.03	T
17	0.00	0.00	0.00	0.10	0.29	0.00	1.79	0.03	0.09	0.00	0.00	T
18	T	0.00	0.00	0.11	0.78	0.00	0.00	0.00	0.00	0.00	0.00	0.14
19	0.60	0.00	0.00	0.00	T	0.00	0.00	0.00	0.00	0.00	0.00	0.69
20	0.00	T	0.00	0.09	0.00	0.00	0.30	0.00	0.00	0.51	0.31	0.2
21	0.10	0.00	0.20	0.05	0.00	0.31	0.08	0.00	0.60	0.00	0.00	0.01
22	0.10	T	0.00	T	0.00	0.00	0.00	0.00	T	0.00	0.00	T
23	T	0.43	0.00	0.08	0.00	0.00	0.10	0.00	0.00	0.00	0.00	T
24	T	0.00	0.00	T	1.05	0.42	T	0.00	0.00	0.00	0.00	T
25	0.00	0.00	0.00	T	T	0.00	0.40	0.00	0.00	0.00	0.00	T
26	0.00	0.05	0.00	0.00	0.00	0.50	0.02	0.00	0.00	0.00	0.00	T
27	0.00	0.43	0.09	0.11	0.00	0.10	0.00	0.00	0.00	T	T	T
28	0.00	0.00	T	0.00	0.05	0.00	0.00	0.00	0.00	0.20	0.05	T
29	0.00		T	0.00	T	0.60	0.00	0.00	0.00	0.08	0.00	T
30	0.00		T	0.21	0.00	0.28	0.00	0.00	0.00	0.00	0.00	T
31	T		0.00		0.00		0.00	0.00		0.00		T
TOT.	1.71	2.14	1.19	2.48	4.81	4.74	2.80	2.26	2.08	4.66	2.45	1.46

T = TRACE

ANNUAL TOTAL:

32.78

ORIGINAL

D0360-7

JAN 30 1998

THE OHIO VALLEY COAL COMPANY
POWHATAN NO. 6 MINE
RAINFALL - 1996

DATE	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	
1	T	0.08	0.00	0.00	0.18	0.00	0.00	0.00	0.00	0.00	0.00	T	
2	0.20	0.00	0.00	0.00	0.00	0.20	0.00	0.00	0.00	0.02	0.00	0.00	
3	0.01	0.00	T	0.00	0.00	0.20	T	0.00	0.02	0.00	0.00	T	
4	0.03	0.00	0.00	0.00	0.60	0.21	0.00	0.00	0.00	0.00	0.00	0.00	
5	0.00	0.00	1.10	0.00	0.50	0.00	0.00	0.00	0.00	0.00	0.00	0.30	
6	0.00	0.00	0.45	0.00	0.00	0.27	0.00	0.00	1.60	0.00	0.11	0.00	
7	1.20	0.08	0.15	T	0.21	0.07	0.00	0.00	0.10	0.00	1.30	0.00	
8	0.10	T	0.00	T	0.40	0.10	0.00	0.41	0.00	0.00	0.21	0.05	
9	0.14	0.00	0.00	T	0.00	0.10	0.00	0.00	T	0.28	0.20	0.00	
10	0.00	0.00	0.00	0.00	0.00	0.09	0.00	0.00	0.00	0.01	0.07	0.00	
11	0.00	0.10	0.00	0.00	0.69	0.41	0.00	0.00	0.00	0.00	T	0.09	
12	0.10	0.19	0.00	0.00	0.00	T	0.00	0.16	0.05	0.00	0.00	0.29	
13	0.00	T	0.00	0.00	0.00	0.00	0.00	0.00	0.07	0.00	T	0.00	
14	0.00	0.02	0.00	0.00	0.00	T	0.00	0.00	0.00	0.00	T	0.00	
15	0.00	0.00	0.54	0.92	0.90	0.00	0.75	0.40	0.00	0.00	0.00	0.00	
16	0.13	0.00	0.00	0.10	0.50	0.00	0.00	0.00	1.69	0.00	0.00	0.22	
17	0.00	0.00	0.27	0.00	0.00	0.00	0.36	0.00	0.02	0.00	0.10	0.00	
18	0.00	0.02	0.00	0.04	0.00	0.95	1.64	0.00	0.00	0.92	0.20	0.02	
19	0.56	0.45	1.61	0.00	0.00	T	0.00	0.00	0.00	0.22	0.00	T	
20	0.00	0.25	0.29	0.00	0.00	0.00	0.00	0.04	0.00	0.20	0.00	0.00	
21	0.00	T	0.08	0.00	0.30	0.00	0.44	0.00	T	0.15	0.00	0.00	
22	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	T	T	0.00	0.10	
23	0.00	0.00	0.00	0.72	0.00	0.00	0.01	0.10	0.04	0.00	0.00	0.40	
24	0.09	0.00	0.00	0.00	0.00	0.89	0.10	0.00	T	0.00	0.05	0.00	
25	0.00	0.17	0.00	0.00	0.00	0.00	0.00	0.00	T	0.00	0.50	0.00	
26	0.16	0.35	0.00	T	0.25	0.00	0.00	0.00	T	0.00	0.00	0.00	
27	T	1.30	0.00	0.00	0.19	0.00	0.00	0.00	1.64	0.01	0.00	0.09	
28	0.00	T	0.20	1.00	0.71	0.00	0.00	0.00	T	0.24	0.00	0.20	
29	0.00	0.00	0.00	0.20	0.26	0.00	0.20	0.00	0.00	0.00	0.36	0.20	
30	0.06		0.00	0.46	0.00	0.32	0.02	0.00	0.00	0.00	0.61	0.00	
31	0.00		T		0.00		0.00	0.00		0.00		0.00	
TOTAL	2.78	3.01	4.69	3.44	5.69	3.81	3.52	1.11	5.23	2.05	3.71	1.96	41.00

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THE OHIO VALLEY COAL COMPANY
POWHATAN NO. 6 MINE
RAINFALL - 1997

DATE	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	
1	0.00	0.00	1.10	0.00	0.00	0.32	0.29	0.00	0.00	0.00	0.25	0.00	
2	0.01	T	1.20	0.00	0.00	0.90	T	T	0.04	0.00	0.07	0.00	
3	0.03	0.14	0.30	0.00	0.64	0.03	0.00	0.40	0.00	0.00	T	0.21	
4	0.60	0.35	0.00	T	0.00	0.00	0.00	T	0.00	0.00	0.00	T	
5	0.00	0.01	0.35	0.00	0.12	0.00	T	0.00	T	0.00	0.00	0.06	
6	0.00	0.00	T	0.00	0.01	0.00	T	0.00	0.00	0.00	0.09	0.04	
7	0.00	0.10	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.39	0.04	
8	0.00	T	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.19	0.00	
9	0.29	0.00	0.71	0.00	0.90	0.00	0.20	0.00	0.45	0.05	0.00	0.23	
10	T	T	0.00	0.00	T	0.00	0.00	0.00	T	0.00	0.01	0.31	
11	0.00	T	0.00	0.21	T	0.00	0.00	0.00	0.00	0.00	0.05	0.01	
12	T	0.00	0.00	0.48	0.00	0.18	0.00	0.59	0.00	0.00	0.00	T	
13	0.00	0.52	0.29	0.00	T	0.01	0.00	0.10	0.00	0.02	1.30	0.00	
14	0.00	0.00	0.02	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
15	T	0.00	0.00	0.00	0.00	0.00	0.00	0.70	0.00	0.00	0.00	0.00	
16	0.28	0.05	0.00	T	0.10	0.49	0.00	0.07	0.00	0.00	0.30	0.00	
17	T	0.00	0.00	0.00	T	0.00	0.00	2.53	0.09	0.00	0.00	0.00	
18	0.00	0.00	0.20	0.00	0.05	0.46	0.00	0.00	0.00	0.00	0.00	0.00	
19	0.00	0.10	0.00	0.00	0.65	0.00	0.00	0.49	1.26	0.00	0.00	0.00	
20	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.20	0.00	0.00	0.00	0.00	
21	0.00	0.02	0.00	0.00	0.00	0.00	0.00	0.09	0.00	0.00	0.39	0.15	
22	0.27	0.00	0.00	0.01	0.00	T	0.50	0.00	0.00	0.00	0.01	0.18	
23	0.00	0.00	0.02	0.04	0.00	0.00	0.06	0.00	T	0.00	0.00	T	
24	0.23	0.00	T	0.79	0.90	0.00	0.00	0.08	0.00	0.00	0.00	0.00	
25	0.01	0.00	1.04	0.60	1.10	0.00	0.00	0.00	0.00	0.20	0.00	0.00	
26	0.00	0.17	T	0.00	0.00	0.05	0.00	0.00	0.00	1.72	0.20	0.00	
27	0.79	0.00	0.00	0.39	0.00	0.00	0.00	0.10	0.00	0.00	0.00	0.00	
28	0.08	0.00	0.05	0.00	0.00	0.00	0.11	0.00	1.20	0.00	0.20	0.10	
29	0.00		0.00	0.00	0.20	T	0.00	0.00	0.00	0.00	0.10	0.30	
30	0.00		0.18	0.03	T	0.33	0.00	0.00	0.18	0.00	0.12	0.00	
31	0.00		T		0.25		0.00	0.00		0.00		0.00	
TOTAL	2.59	1.46	5.46	2.56	4.92	2.77	1.16	5.35	3.22	1.99	3.67	1.63	36.78
H/L	L	L	H	L	H	L	L	H	L	L	H	L	

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ADDENDUM TO PAGE 17, PART 2, D
THE OHIO VALLEY COAL COMPANY
POWHATAN NO. 6 MINE
PERMIT D-0360

SEASONAL VARIATIONS OF WATER QUALITY AND QUANTITY

Surface and groundwater data contained in the Attachment 14 forms included with this application indicate the seasonal variances of quality and quantity of the water in this area.

The water wells existing in the area give a fairly representative indication of the near surface water bearing zones that can be found in this region. The Probable Hydrologic Consequences of mining gives a detailed description of these characteristics.

Precipitation is one of the principal factors influencing water systems. Infiltration of precipitation increases soil moisture and influences groundwater chemical composition. The time required for infiltrating precipitation to reach lower water bearing zones increases with increasing depth. Depending on the morphological structure, character of surface vegetation, and intensity of precipitation the amounts of infiltration also vary greatly. Amounts of infiltration subsequently influences the dissolved solids contents of groundwater which, in most cases, become more dilute during periods of prolonged precipitation. Rainfall data collected at or near the Powhatan No. 6 Mine has been included in this application.

All the data will show that an increased water quantity and a decrease in chemical constituent levels is realized during times of increased precipitation and snow melt of winter and spring seasons; while a decrease in water quantity and increase in chemical constituent levels is realized in dry summer and early autumn seasons.

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Probable Hydrologic Consequences


Ohio Valley Coal Company
Powhatan No. 6 Mine
Application Area D-0360-7

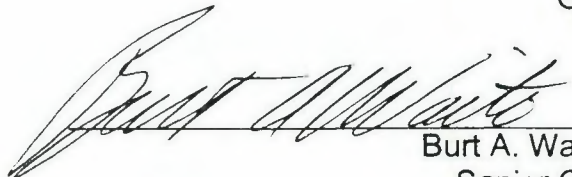
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Alledonia, Ohio 43902

April 25, 1997
Revised January 29, 1998
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GROUND WATER RESOURCE SPECIALISTS
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ANNOTATED BIBLIOGRAPHY	End of Text

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INTRODUCTION

Since 1987, seven longwall application areas of the Powhatan No. 6 Mine have been evaluated relative to the Potential Hydrologic Consequences (PHC) of mining activities. These areas, which are contiguous, are illustrated on the past and future application map of the permit application and include:

<u>Application Area</u>	<u>Year Prepared</u>	<u>Prepared By</u>
R-0360-2	1987	Moody and Associates, Inc.
D-0360-1	1990	Moody and Associates, Inc.
D-0360-2	1991	Moody and Associates, Inc.
D-0360-3	1992	William Siplivy P.E. & C.P.G. (Two additional applications were prepared by OVCC using this PHC for two small areas within the D-0360-3 area. They were identified as D-0360-4 and D-0360-5).
D-0360-6	1996	Moody and Associates, Inc.

This PHC has been prepared for Application Area D-0360-7 on behalf of the Ohio Valley Coal Company by Moody and Associates, Incorporated. Through the efforts of OVCC, an extensive water well and spring monitoring program has been developed and it is now possible to evaluate the impacts of past mining activities on water supplies in detail thereby improving the predictive capabilities of the PHC.

TOPOGRAPHIC SETTING

The Powhatan No. 6 Mine is located in Belmont County in southeastern Ohio. The topography of the entire application area is typical of the Appalachian Plateau Province and is characterized by narrow rounded ridges and deep V shaped valleys dissecting the terrain, which is underlain by essentially horizontal sedimentary rocks. Topographic relief within the D-0360-7 application area is approximately 380 feet. The lowest elevation is approximately 1020 feet, located where Hutchison Run crosses the northeastern application area boundary. The highest elevation is 1397 feet at the benchmark on the top of Galloway Knob in the center of the application area.

The surface drainage within the application area is divided into three drainage areas. Lucas Lash Road, which runs east to west through the center of the application area, marks the approximate

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location of the drainage divide. The southern half of the area drains to the south, through unnamed tributaries of Williams Creek. Williams Creek is a tributary of McMahon Creek. The northern half drains to the north and east through Hutchison Run and unnamed tributaries to McMahon Creek. Hutchison Run is also a tributary of McMahon Creek. A small portion of the **southwest** corner of the application area drains southward to Joy Fork, which is a part of the Captina Creek drainage area.

Most of the developed water supplies (wells and springs) are located along the roads in the application area. There is a concentration of water supplies in the southeast corner of the application area along Hart Road and State Route 9. Another concentration is located along Lucas Lash Road. The remainder of the water supplies are scattered throughout the area along other roads. There are two large sections of the applications area that have few developed water supplies in them. These two sections are the section north of Lucas Lash Road to McMahon Creek and the section south of Lucas Lash Road to Hart Road. A total of 38 used wells and 18 used developed springs were identified and inventoried within the hydrologic boundary of the application area. Fifteen (15) of the used wells and **six (6)** of the used developed springs are outside the planned mining area but are within the hydrologic boundary. There are 21 unused wells and **10** unused developed springs within the hydrologic boundary. Seventeen ponds were identified and inventoried within the hydrologic boundary.

GEOLOGIC SETTING

A detailed discussion of the stratigraphic and structural setting of the Application Area is provided in the Geologic Section of this application. However, those properties of the geologic setting pertinent to ground water occurrence and movement are described here.

The bedrock units that outcrop in the Application Area belong to the Dunkard Group that is Upper Pennsylvanian to Permian in age. The rocks consist of interbedded sandstone, siltstone, shale, mudstone, clay, fresh to brackish water limestone and coal. The Monongahela Formation (Pennsylvanian) underlies the Dunkard Group and consists of similar rock types. The Pittsburgh (No. 8) Coal Bed, which is the seam to be mined, marks the bottom of the Monongahela Formation. According to Mr. James M. Raab, a hydrogeologist with the Ohio Department of Natural Resources, in correspondence to Dave Bartsch of the Ohio Valley Coal Company dated January 30, 1989, water below 250 feet beneath the stream bottoms is brackish (personal communication).

Based on corehole data presented in other parts of this application, "soft" rocks constitute 46 to 81 percent of the rock column in the D-0360-7 Application Area. Soft rocks are defined here as shale, mudstone, claystone, sandy shale and clay. The relatively high percentage of soft rocks is significant as these units have limited primary permeability, tend to deform in a more plastic manner and are more prone to self-healing after fracturing. Aquifers in these units normally have low yields, are less susceptible to subsidence fracturing due to mining, fractures tend to close in response to lithostatic pressures or plug with fine-grained sediment and may contain clays that swell when wetted.

In addition, there is considerable horizontal and vertical variability of the rock units. Rapid facies and hydrologic property changes tend to limit the horizontal continuity of the individual rock units. With the exception of major coal seams, very few lithologic units are continuous across the proposed application area. Horizontal facies changes and corresponding changes in hydrologic properties of the rocks tend to enhance the importance of localized flow systems. In addition, most available ground water in this region is limited to the first 100 feet of the surface where enhanced secondary permeability associated with rock fracturing is present. This information is supported by the OVCC drilling records and from locally developed wells and springs. Ground water recharge in the upland or ridge top areas results in downward migration primarily within this shallow saturated zone. Because the topographic relief between ridge tops often exceeds 100 feet, there are localized flow systems under the hilltops that are not in hydrologic communication with adjacent hilltops. While the ground water under any given ridge top can be viewed as being continuous, the continuity generally does not extend to adjacent hilltops.

The geologic structures in the Application Area consist of gently folded rocks that dip to the southeast at approximately 40 feet per mile. Overburden thickness above the Pittsburgh coal seam ranges from a low of approximately 210 feet in the northeast section of the area to almost 600 feet in the **east-central section** of the area **beneath Galloway Knob**. While geologic structure can influence regional ground water flow patterns, local variations in hydraulic properties of the rocks tend to accentuate localized flow systems.

GENERAL HYDROLOGIC SETTING

The source of all ground and surface water in the mine plan area is precipitation. Upon reaching the land surface, water that is not part of direct surface runoff or evapotranspiration infiltrates into the subsurface and contributes to soil moisture and ground water.

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Within the bedrock aquifer system, ground water occurs in primary and secondary openings. Primary openings are pore spaces between sand, silt and clay grains formed at the time of sediment depositions. Primary permeability is the ability of water to move between pore spaces. In this area, primary permeability is very low and limited ground water movement occurs in hard or soft rocks as a result of primary openings (Stoner 1983, Siplivy 1992).

Secondary porosity and permeability is formed by fractures or partings in the rock mass. Most available ground water in the application area occurs within the first 100 feet below the surface within these secondary openings and the success of a water well in terms of yield potential is dependent upon the well encountering water filled fracture zone(s) that transmit enough water to the well bore to meet the well's intended use (Schmitt et al, 1983; Waite, 1987).

Fractures are not ubiquitous in the area, however, and are not interconnected over large areas. For these reasons, it is very difficult to identify aquifers over large areas and the ground water flow system tends to be made up of small localized fracture controlled systems. While fractures in hard rocks tend to stay open better than fractures in soft rock, the horizontal and vertical variability of even the hard rock units tend to produce hydraulically isolated areas.

In addition, fractures tend to close at increasing depths due to overlying lithostatic pressures, thereby limiting the effective depth of the ground water flow system (Stoner, 1983). This condition is evident throughout the Powhatan No. 6 Mine. The mine, in general, is very dry with very minor amounts of water inflow limited to the low cover areas (generally less than 200 feet). The overburden thickness in the application area ranges from about 200 to just over 500 feet. Very little water inflow into the mine is expected in the deeper cover areas.

During full recovery mining, where the roof is allowed to collapse, existing natural fractures are often reopened and new fractures are created. Typically, a rubble zone develops above the extracted coal seam with a gradually reduced fracture density pattern above the rubble zone. However, the fractures developed by subsidence are normally a poorly interconnected network of cracks and are rarely continuous from the land surface to the mine void (Rauch, 1987). This condition is evidenced by the fact that recent longwall mining to the south and southeast has not resulted in large volumes of water in-flow in the longwall or adjacent areas in the Powhatan No. 6 Mine (Bartsch, 1994).

The soft rocks (which account for 46 to 81 percent of the rock column in the Application Area) tend to deform in a more plastic manner with limited fracturing. Many of the fractures that do

form in soft rocks tend to "heal" by fracture compression or clogging. This process limits the amount of water that would tend to migrate downward. The mining conditions experienced in the longwall panels immediately southeast of this Application Area where cover thickness was in excess of 300 feet substantiates this interpretation of the subsidence affected flow systems. On two separate occasions, in-mine inspections were made to observe water conditions. It was noted that no water was accumulating in the completed longwall panel in Application Areas D-0360-2 or -3 and no water was being pumped from the sections. An inspection of the chain pillar areas, including close inspection of the accessible areas of the gob in three completed panels, did not reveal any ground water in-flow. Interviews with several mine foremen, who directed mine operations of the longwall panel areas, verified generally dry conditions prevailed throughout the mining and post-mining phases of the analog areas.

A readjustment of the subsurface flow system does occur in areas of high cover (>200 feet) resulting in some changes in ground water levels and a repositioning of some hillside springs. Changes to the net hydrologic balance in these areas, however, are minimized. The water that infiltrates from the land surface remains in the flow system and does not, to a major degree, enter the mine. The repositioning of the static water levels often results in inconvenience (usually temporary) to the ground water users in the area. There are no areas within the D-0360-7 Application Area with less than 200 feet of overburden.

Based on an evaluation of the geologic units presently supplying water to wells or springs in the Application Area, a total of four aquifers have been identified within the D-0360-7 hydrologic boundary. These units, which are also outlined on Form 14B of this application, are summarized below:

Aquifer A: Unconsolidated Material

Includes the layer of weathered bedrock above solid bedrock.

Aquifer B: Washington No. 12 Cyclothem

Includes the rock sequence from the Washington Coal Bed to the surface of the consolidated bedrock. Occurs from approximately 350 feet to 500 feet above the No. 8 Pittsburgh Coal Bed.

Aquifer C: Waynesburg No. 11 Cyclothem

Includes the rock sequence from the Waynesburg No. 11 Coal Bed to the Washington No. 12 Coal Bed. Occurs from approximately 250 feet to 350 feet above the No. 8 Pittsburgh Coal Bed.

Aquifer D: Sewickley No. 9 Cyclothem

Includes the rock sequence from the Sewickley No. 9 Coal Bed to the Waynesburg No. 11 Coal Bed. Occurs from approximately 90 feet to 250 feet above the No. 8 Pittsburgh Coal Bed.

These units are only recognized as aquifers where they occur within 100 feet of the surface where secondary porosity and permeability is greatest.

WATER SUPPLIES

A total of 56 water supplies (38 wells and 18 developed springs) that serve domestic and agricultural needs have been inventoried within the hydrologic boundary of the Application Area. The Application Map illustrates the location of these supplies. Nineteen of the inventoried wells and eight of the inventoried springs are outside the planned mining area but are within the hydrologic boundary. Nineteen of the water supplies, in the hydrologic boundary, are over 500 feet from the closest planned longwall panel. The water supply inventory also identified all of the unused wells and developed springs within the hydrologic boundary of the application area. These unused supplies are included on ATTACHMENT 14C. Only the used supplies are discussed in the PHC.

TABLE 1 presents a summary of the pertinent data for used wells in the Application Area D-0360-7. In general, the average well depth in the Application Area is 72 feet. The average overburden thickness is 376 feet and the rock column contains about 68 percent of soft rocks (shale, clay, mudstone, and sandy shale). There are two wells located in the valley bottoms, 9 wells located on hillsides and 27 wells located on hilltops. Twenty of the wells are located over planned longwall panels and three wells are located over gate areas. Fifteen wells are outside the panel or gate areas.

TABLE 2 presents a summary of the pertinent data for the used developed springs. Similar overburden, lithologic, and topographic settings are associated with the springs. Most of the inventoried springs occur as hillside seeps. This is a common phenomenon in this hydrogeologic

setting and it reflects the presence of low permeability units that act as aquitards that promotes horizontal flow to the side of the hills.

In addition, five ponds have been recognized as agricultural water supplies.

EVALUATION OF HYDROLOGIC IMPACT IN PREVIOUSLY MINED AREAS

Literature Review

Since 1972, when the Powhatan No. 6 Mine was opened, considerable research has been conducted relative to the impacts on the ground water flow system by longwall mining in the western Pennsylvania, northern West Virginia and southeastern Ohio areas. This literature database was reviewed as a guide to selecting those variables pertinent to predicting the hydrologic consequences of mining in the application area. An annotated bibliography of this literature is provided as the end of this report.

Stoner (1983); Rauch (1984); Cifelli (1986); and Dixon et al (1988 & 1990) explored the relation between overburden thickness and effects on ground water levels. In general, a conclusion was drawn that there is an inverse relation between overburden thickness and detrimental impacts to water levels. Aquifers less than 200 feet above longwall mines are more likely to be partially dewatered than aquifers greater than 200 feet above the mine.

The importance of rock fracturing was investigated by Dixon et al (1990), Parizek (1971), Schubert (1980), and Stoner (1983). The studies conclude that secondary rock fractures have a major influence on ground water occurrence and movement. In addition, Rauch (1984), determined that rock lithology of the overburden material was important in evaluating hydrologic impacts of mining. In general, the presence of a high percentage of soft rocks such as shale, clay, and mudstones minimizes negative impacts.

Walker (1988) and Leavitt et al (1992) indicated the position of the water supply over the longwall panel affected the degree of hydrologic impact. In general, the greatest water level declines occurred directly over the panels and decreased away from the panels. Water wells outside the angle of draw were generally unaffected.

Leavitt et al (1992) found a strong correlation between topographic position and water level declines over longwall mines. In general, where overburden thickness exceeded 300 feet, the greatest impacts occurred in hilltop wells and springs, a lesser impact was noted in hillside wells and springs and the least impacts were noted in valley bottom wells and springs.

Leavitt et al (1992) and Tieman et al (1986) made a correlation between hydrologic base level and water level declines. In general, the closer the bottom of the well (or spring) is to the local hydrologic base level, the less severe and less permanent are the impacts. However, Leavitt noted that base level and topographic position are similar variables and topographic position proved to be a more reliable variable in predicting hydrologic impacts.

These variables, which include overburden thickness, local rock lithology, position over the longwall mining panel, topographic position and local hydrologic base level, are used here to evaluate the potential hydrologic impacts in the application area.

Quantity Impacts In Previously Mined Areas

In November 1992, the Ohio Valley Coal Company submitted a PHC prepared by Mr. William J. Siplivy, P.E., C.P.G., for Application Area No. D-0360-3. This report included a detailed summary of the effects of mining on well and spring water supplies in the R-0360-2 and D-0360-1 Application Areas. At the time the D-0360-3 PHC was prepared, no mining had occurred in the D-0360-2 Application Area. At this time mining has been completed in the D-0360-2 Area

and is nearly complete in the D-0360-3 Area. The data generated by OVCC in these two areas has been reviewed in order to improve the predictive capabilities of the PHC.

Hydrographs of well water levels and spring flows in Areas D-0360-2 and D-0360-3 that have been undermined and have detailed monitoring data, have been prepared and are attached as APPENDIX A-Wells and APPENDIX B-Springs. A total of 46 well hydrographs and 32 spring hydrographs have been evaluated. It has been OVCC's policy to measure water levels and flow rates on a monthly basis for one year prior to undermining until the longwall face is within 3 weeks of undermining the supply, at which point monitoring frequency is increased to a weekly basis. Monitoring is reduced to a monthly basis 3 weeks after undermining and discontinued after one year. The distance to and from the face is represented on the graphical data by positive numbers (distance from water supply to advancing face) and by negative numbers (distance in feet to face after it passes the water supply).

Each of the 46 well hydrographs and 32 spring hydrographs include both static water level measured in feet from the top of casing or spring flow rates and the position of the panel through time. At any point in time as the panel approaches, passes by and moves away from the supply, the flow rate or static water level can be determined. In addition, the variables that may affect the impacts of mining on the water supply are listed on the graph. These include elevation, depth of wells, topographic position (as hilltop, hillside or valley bottom), hydrologic base level elevation, position in relation to mining (as outside mine area, over the gates or chain pillars of the panel, over the quarter panel or over the midpanel), the overburden thickness and the percent of soft rock in the overburden.

Based on the observed changes in water levels or flows, the water supplies were placed in one of three categories. These categories describe the impact that mining

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had on the water supplies. The following are the categories and the criteria that define each category.

Minimal Impacts - Water levels for wells or flow rates for springs either did not decline during mining or returned to pre-mining conditions within two months of undermining

Moderate Impacts - Water levels for wells or flow rates for springs decline during mining but return to premining ranges within two to six months after mining.

Severe Impacts - Water levels for wells or flow rates for springs decline during mining and do not return to premining ranges within six months (or the duration of the monitoring period) after undermining.

A total of 46 wells met the criteria for detailed analysis, which included static water level measurements prior to, during and after mining operations. Of these 46 wells, 19 (41%) had minimal impacts as a result of mining; five (11%) were moderately impacted by mining and 22 (48%) were severely impacted as a result of mining.

There is not a discernible correlation between the minimally impacted wells, the moderately impacted wells or the severely impacted wells and the variables of overburden thickness, overburden lithology, position over the panel or well depth. This may be attributed to the relatively narrow range of difference in these variables in the areas previously mined. All of the water wells in areas D-0360-2 and D-0360-3 that have currently been undermined have similar characteristics of overburden, lithology, panel position and well depth. The well data for areas D-0360-2 and D-0360-3, is summarized in TABLE 3. The hydrographs of the individual wells are attached as APPENDIX A.

There is, however, an apparent relation between topographic position and the impacts of longwall mining on water well supplies. In general, at the Powhatan No. 6 Mine, fewer wells in a valley setting experienced significant water level declines than wells located on hillsides or hilltops. This is consistent with the investigations of Mr. Bruce Leavitt, et. al., who reported a similar finding in their 1992 report, "Effects of Longwall Coal Mining on Rural Water Supplies and Stress Relief Fracture Flow Systems"..

The conclusion derived from this data analysis is that of the wells in Application Area D-0360-7 with geologic settings similar to those described above; 41% may be minimally impacted by mining with no changes in water levels or water levels that recover within two months of undermining, 11% may be moderately impacted with water level declines that recover within six months and 48% may be severely affected with water level declines that do not recover within six months.

A similar analysis was performed for the developed springs that were undermined in the D-0360-2 and D-0360-3 areas. A total of 32 springs met the criteria for detailed analysis, which included flow measurements prior to, during and after mining operations. Of these 32 springs, 2 (6%) had minimal decreases in flow rates (no decrease or recovery within two months); 1 (3%) had moderate decreases in flow rates (decreased flow rates with recovery within six months), and 29 (91%) had severe decreases in flow rates (decreased flow rates that do not recover to pre-mining levels within six months). The spring data for Areas D-0360-2 and D-0360-3, is summarized in TABLE 4. The hydrographs of the individual springs are attached as APPENDIX B.

Like the water wells discussed above, there is not a discernible correlation between the minimally impacted springs, the marginally impacted springs and the severely impacted springs and the variables of overburden thickness, overburden

lithology, position over the panel, discharge rates and also topographic position. This again is attributed to the very narrow range in the evaluation variables. All of the springs in the D-0360-2 and D-0360-3 areas that have currently been undermined have similar characteristics of overburden thickness, lithology, topographic position, panel position and depth.

The conclusion based on this data analysis is that, of the springs in the Application Area with hydrogeologic settings similar to those described above; 6% of the springs may be minimally impacted by mining; 3% may be moderately impacted by mining with temporary decreases in flow rates that persist for less than six months and 91% may be severely impacted by mining with decreased flow rates that do not recover within six months

The break down of impacts on the wells and springs in areas D-0360-2 and D-0360-3 were revised from those presented in the D-0360-6 PHC to those presented in this PHC. The hydrographs were updated using data collected since the D-0360-6 PHC was prepared. The impacts to the water supplies were reevaluated using the updated hydrographs. The impacts of mining on six wells and three springs were changed. The impact changes are now listed on the cover sheets to APPENDICES A and B. The discussion in the texts and the information presented in TABLES 3 and 4 has been revised to reflect these changes.

The database was also used to estimate the distance from the advancing longwall face at which measurable impacts on water supplies occurred. This was done by evaluating changes in static water levels in wells and flow rates in springs of water supplies located **within the hydrologic boundary**. Ohio Valley Coal Company monitors water levels and spring flows weekly for three weeks as the longwall face approaches the supply and for three weeks after the face passes the supply. The monitoring data does not show the exact time and distance to face at which an impact may have occurred, although the interval during which the impact occurred can be bracketed. The distance to the longwall

face that coincides with the last water level or flow monitoring event prior to an impact occurring and the distance to the face at which an impact was detected were determined for 22 wells and 9 springs in Application Areas D-0360-2 and D-0360-3. The distance to the advancing longwall face that bracket the interval during which an impact occurred are listed on TABLE 5. The observed impacts included short and long term changes in well water levels and spring flows. In one spring, the flow increased as mining approached the supply and returned to the normal flow range after the mining passed the supply. In several supplies there was no detectable impact observed.

Quality Impacts In Previously Mined Areas

The water quality affects of longwall mining on the ground water flow system were also reviewed. A total of 28 wells and 22 springs were evaluated. Each of these 50 water supplies are located over previously mined sections of the D-0360-2 and D-0360-3 areas. In each case, an affect on water quantity in terms of reduced water levels or reduced flow rates was documented and water quality data was available both before and after the impacts occurred. A summary of the water quality data for those supplies is presented in TABLE 6, which presents the range of water quality in both the pre-mining phase and post- mining phase for pH, acidity, alkalinity, iron, manganese, hardness and sulfate. Nitrate concentrations did not appear to vary in response to mining.

This data indicates the water quality changes from the premining to the post mining phase are relatively minor. However, the following trends were noted:

For Wells:

15 of the 28 wells exhibited increasing levels of iron in the post-mining phase
Seven of the 16 wells tested for manganese exhibited increasing levels of manganese in the post-mining phase

For Springs:

10 of the 22 springs exhibited increased iron levels in the post-mining phase
Seven of the 22 springs exhibited increased manganese levels in the post-mining phase

Seven of the 22 springs exhibited increased hardness levels in the post-mining phase

Typically the iron and manganese increases were temporary and not persist for more than a year.

PROBABLE HYDROLOGIC CONSEQUENCES SUMMARY

Surface Water

Based on a review of the existing literature, it is expected water flow in selected sections of first order streams where overburden thickness exceeds 200 feet may be temporarily reduced over relatively short stream segments. Due to the high percentage of soft rocks in the mine overburden, the overburden thickness and the minimal amount of water that enters the mine, any stream water loss that may occur is not expected to drain into the mine.

This generalized theory for areas with 200 feet or more of cover is supported by the data generated by the OVCC in the D-0360-2 and D-0360-3 areas where undermining has occurred and hydrologic changes have been monitored. These areas are in very similar hydrogeologic settings and a temporary lowering of the water table under the hilltops and higher elevations is documented in water wells and spring flows. It is expected that any reduction in stream flows will be limited in the upper elevations primarily in the first order streams. Some impacts to the first order streams north of Lucas Lash Road may occur.

Four stream segments that were monitored in the pre and post mining phases in Application Area D-0360-3 were selected at random for detailed evaluation. Hydrographs of these four data sets are presented on APPENDIX C at the end of this report. These data verify the general predictions listed above are verbalized as follows:

Monitoring Point U34-067

This unnamed tributary to Williams Creek was monitored for flow rates on twelve separate occasions prior to undermining and 14 times post undermining. This first

order stream is shown on the U.S.G.S. Topographic map as an intermittent stream and there was approximately 265 feet of overburden in the area. There was no apparent impact on stream flow as a result of undermining.

Monitoring Point U34-144

This unnamed tributary to Williams Creek was monitored for flow rates on nine separate occasions prior to undermining and 15 times post undermining. This is a first order stream and is shown as intermittent on the U.S.G.S. Topographic map. There is approximately 288 feet of overburden in the area. There was no apparent impact on stream flow as a result of undermining.

Monitoring Point U34-038

This point on Williams Creek was monitored for flow rates on 12 occasions prior to mining and nine times post mining. Williams Creek is a third order stream and has perennial flow. There is approximately 250 feet of cover at this location. There was no apparent impact on stream flow as a result of undermining.

Monitoring Point U29-C

Flow in this first order intermittent stream was monitored on twelve occasions prior to undermining and 13 times after undermining. The overburden thickness is approximately 260 feet. No apparent impacts were noted as a result of undermining.

Ground Water

The data generated in the D-0360-2 and D-0360-3 areas indicate that ground water levels may decline as mining passes under an area. Most developed water supplies will most likely experience a decline in static water level or flow. The amount of this decline appears to be dependent on the topographic position of the water supply. Hilltop water supplies may be impacted more often than water

supplies located in valley bottoms. Springs are generally more significantly impacted than wells. Approximately 90% of the springs undermined may experience significant impacts, while approximately 50% of the wells may be significantly impacted. Some recovery of ground water levels occurs after mining has passed under a water supply.

Post Mining Water Breakouts

The area with the lowest cover is located in the northeast section of Application Area D-0360-7. The lowest surface elevation in the Application Area is approximately 1020 feet msl. The lowest surface opening elevation for the Powhatan No. 6 Mine is 847 feet msl. The maximum coal elevation in Application Area D-0360-7 is approximately 845 feet msl or 2 feet below the lowest surface elevation. The addition of the D-0360-7 area will raise maximum elevation in the Powhatan No. 6 Mine to approximately 845 msl or 2 feet below the lowest surface opening in the Powhatan No. 6 Mine. No post mining water breakouts are predicted to occur due to mining in the D-0360-7 area.

Abandoned Mine Bt - 100

The abandoned Consolidation Coal Company Eleanor Mine (Bt - 100) is located to the northeast of the D-0360-7 Application Area. The Eleanor Mine is 513 feet from the D-0360-7 Application Area. The coal elevation, in the Eleanor Mine, ranges from 785 feet to 826 feet. The lowest surface elevation over the Eleanor Mine is approximately 920 feet. The coal elevation in the D-0360-7 Application Area ranges from approximately 840 feet to 760 feet. The lowest surface elevation over the D-0360-7 Application Area is 1030 feet. The Eleanor Mine was closed in the late 1920's. It is not known if the Eleanor mine is flooded or what the mine pool level may be.

Mining in the D-0360-7 Application Area is not expected to have any impact on the abandoned Eleanor Mine. A 500 foot thick solid coal barrier will be left between the two areas. Due to the slight difference in coal elevation between the Eleanor Mine and the D-0360-7 Application Area, no hydraulic communication between the mines is expected.

Water Supplies

A total of 56 water supplies (38 wells and 18 springs) have been inventoried in Application Area D-0360-7, including the hydrologic boundary area. The potential impacts on these water supplies by mining have been evaluated based on monitoring of springs and wells in mined out sections of the D-0360-2 and D-0360-3 areas and a review of pertinent literature

For areas with high cover (>200 feet overburden) the predicted impact on wells and springs are exactly as they were documented in the mined sections of Application Areas D-0360-2 and D-0360-3. The notable exception is the limited impact observed in wells in valley settings (this may reflect the limited database for wells of this type). When cover thickness exceeds 200 feet in valley bottom settings, an 11% likelihood of severe impacts, an 11% likelihood of moderate impacts and a 78% likelihood of minimal impacts is used to be consistent with the findings of the analog areas. These impacts are summarized on TABLE 3 for wells and TABLE 4 for springs and are expressed as a percent of the wells that experienced significant, moderate or minimal impacts. As outlined above, for the purposes of these predictions:

- Severe indicates water level declines or reduced flow rates that persist for more than six months.
- Moderate indicates water level decline or reduced flow rates that recover within two to six months.
- Minimal indicates a water level decline or reduced flow rates that recover within two months.

Although the analog areas D-0360-2 and D-0360-3 did not include low cover (<200') situations, it is recognized from the literature review that significant water level declines or diminished spring flow rates are likely in those settings. Thus all water wells and springs with less than 200 feet of cover are predicted to have a greater than (>) 75% chance of significant water level declines or dewatering for a period of six months or more. Water wells and springs located 700 or more feet outside the limit of long ^{* wall} ~~water~~ mining (but within the hydrologic boundary) are not expected to be impacted by mining operations.

** per Dave Bertsch, GM 4/14/98*

Previous PHC's

As outlined above, OVCC has prepared five previous PHC's in the past for various areas in the Powhatan No. 6 Mine area. Since 1987, there has been a concerted effort to improve the predicative capabilities of mining impacts on surface water and ground water. This has included an extensive premining and postmining quantity and quality monitoring of wells and springs. This PHC reflects the database now available and represents an improved method of evaluation.

The early PHCs used overburden thickness and percentage of soft rocks as the primary indicators of potential impacts. The data now indicates that the topographic position of the water supply may be the primary indicator of the potential impact.

A comparison between the predicted hydrologic consequences for the D-0360-2 and D-0360-3 Application Areas and the actual hydrologic impact was made. There were 63 water supplies (40 wells and 23 springs) that have been undermined and for which there was sufficient data available to make this comparison. The predicted and actual hydrologic impacts are listed in TABLE 7.

The predicted impact was correct for 30% of the water supplies and incorrect for 37% of the supplies. The predicted impact was close (only off by one category) for 33% of the water supplies. For nine water supplies the actual impact was milder than the predicted impact (i.e., a severe impact was predicted and the actual impact was minimal). As mining progresses and more data is collected, the accuracy of the predictions is expected to improve.

APPENDICES A and B include hydrographs that are not listed on TABLE 7. TABLE 7 only includes water supplies for which an impact prediction was made in the D-0360-2 and D-0360-3 PHCs. APPENDICES A and B contain hydrographs for water supplies for which monitoring data is available regardless of whether or not a previous impact prediction was made. TABLE 7 was used to evaluate the accuracy of the impact predictions. The actual impacts from mining determined from the hydrographs were used in TABLE 7. The hydrographs were used to evaluate to actual impacts of mining on water supplies. Limiting the hydrographs available for these evaluations to water supplies for which an impact prediction was made would affect the accuracy of this evaluation.

TABLE 1

Ohio Valley Coal Company
Application Area D-0360-7

Summary of Water Well Data

Used wells within the D-0360-7 hydrologic boundary

Total Number of Wells	38
Number of Dug Wells (<30')	9
Number of Drilled Wells (>30')	25
Number of Wells with unknown depths*	4
Average Well Depth	72 feet
Depth Range	18 to 155 feet
Average Overburden Thickness	376 feet
Range of Overburden Thickness	114 to 511 feet
Number of Wells on Hilltops	27
Number of Wells on Hillsides	9
Number of Wells in Valley Bottoms	2
Number of Wells Outside Panels	15
Number of Wells Over Gates	3
Number of Wells Over Quarter Panel	12
Number of Wells Over Middle Panel	8
Average Percent Soft Rocks	68%
Range of Percent of Soft Rocks	49% - 81%

*Sealed, covered or buried (inaccessible)

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TABLE 2

Ohio Valley Coal Company
Application Area D-0360-7

Summary of Spring Data

Used developed springs within the D-0360-7 hydrologic boundary

Total Number of Developed Springs	18
Average Overburden Thickness	423 feet
Range of Overburden Thickness	318-515 feet
Number of Springs on Hilltops	5
Number of Springs on Hillsides	11
Number of Springs in Valley Bottoms	2
Number of Springs Outside Panels	6
Number of Springs Over Gates	3
Number of Springs Over Quarter Panel	7
Number of Springs Over Middle Panel	2
Average Percent Soft Rocks	72%
Range of Percent of Soft Rocks	52% - 81%

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TABLE 3

Ohio Valley Coal Company
Application Area D-0360-7

**Summary of Hydrologic Impacts on
Wells Undermined in Application Areas D-0360-2 and D-0360-3**

Category	No. of Wells	Percentage Of Wells	Overburden Thickness	Percentage Of Soft Rocks	Topographic Position	Panel Position	Well Depth
Minimally Impacted Wells	19	41%	Range 203' – 582' Average 413'	Range 59% - 84% Average 72%	8 Hilltop 3 Hillside 8 Valley Bottom	5 Outside Panel 4 Gates 3 Quarter Panel 7 Midpanel	Range 12" – 208' Average 66'
Moderately Impacted Wells	5	11%	Range 206' – 577' Average 467'	Range 66% - 84% Average 69%	4 Hilltop 1 Valley Bottom	2 Outside Panel 2 Gates 1 Quarter Panel	Range 25' – 74' Average 52'
Severely Impacted Wells	22	48%	Range 299' – 588' Average 453'	Range 62% - 84% Average 72%	15 Hilltop 7 Hillside	1 Outside 3 Gates 10 Quarter Panel 8 Midpanel	Range 15' – 138' Average 76'

- NOTE: Panel position refers to the position of the water supply over the longwall panel. Outside indicates the supply is outside of the mining area, gate is over the gate entries, quarter panel indicates the supply is over the panel and near the edge and midpanel is over the middle of the longwall panel.

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TABLE 4

Ohio Valley Coal Company
Application Area D-0360-7

**Summary of Hydrologic Impacts on
Springs Undermined in Application Areas D-0360-2 and D-0360-3**

Category	No. of Springs	Percentage Of Springs	Overburden	Percentage Of Soft Rocks	Topographic Position	Panel Position	Discharge Range (GPM)
Minimally Affected Springs	2	6%	472'	59% & 81%	2 Hillside	1 Outside Panel 1 Midpanel	0 - 2.2
Marginally Affected Springs	1	3%	Range 405' - 479' Average 417'	72%	1 Hillside	1 Midpanel	0 - 3.1
Severely Affected Springs	28	91%	Range 285' - 532' Average 447'	Range 57% - 84% Average 75%	25 Hillside 3 Valley Bottom	1 Outside Panel 3 Gates 12 Quarter Panel 12 Midpanel	0 - 18

* NOTE: Panel position refers to the position of the water supply over the longwall panel. Outside indicates the supply is outside of the mine area, gate indicates supply is over the gate entries, quarter panel indicates the supply is close to the edge of the panel and midpanel indicates supply is over the middle of the longwall panel.

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TABLE 5

**Ohio Valley Coal Company
Application Area D - 0360 - 7**

Supply Number	Distances To Longwall Face Between Which Impacts To The Supply Occurred	
	Distance To Face At Which An Impact Was Detected (feet)	Distance To Face At Which No Impact Was Detected (feet)
W 50	1	663
W 51	-124	538
W 52	-331	343
W 53	-541	133
W 54	-561	237
W 55	-231	314
W 56		No detectable impact
W 60	-152	640
W 61	-117	423
W 62	-1620	143
W 73	-120	Well not accessible prior to undermining
W 74	-190	Well not accessible prior to undermining
W 75	-1397	-745
W 77		No detectable impact
W 78		No detectable impact
W 82	-214	292
W 83		No detectable impact
W 84		No detectable impact
W 85		No detectable impact
W 282 A	-232	570
W 283	-222	610
W 285		No detectable impact
SP 38	158	884
SP 41	-37	689
SP 45	400	510
SP 52		No detectable impact
SP 175	-454	17
SP 176	-865	202
SP 177	-299	172
SP 198*	-594	53
SP 226	-1150	73

* The flows of springs 180 and 198 increased as mining approached these supplies then returned to within the normal flow range after mining past under the supplies.

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(Note: The impacts to these supplies are shown on the hydrographs contained in APPENDICES A and B)

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TABLE 6

Ohio Valley Coal Company
Application Area D - 0360-7

Ground Water Quality Summary Pre and Post Mining Water Quality Application Areas: R-0360-2, D-0360-1, D-0360-2, D-0360-3

Supply No.	pH		Acid		Alk.		Iron		Manganese		Hardness		Sulfate	
	Pre SU	Post SU	Pre mg/l	Post mg/l	Pre mg/l	Post mg/l	Pre mg/l	Post mg/l	Pre mg/l	Post mg/l	Pre mg/l	Post mg/l	Pre mg/l	Post mg/l
SP-21	7.3-8.26	7.2-8	3.5-47.4	7.2-30.4	39.1-90.9	74-186.77	0.03-0.08	<0.04-.28			100-106	101-218	37-41	24
SP-22	7.7-7.83	7.1-7.7	5.3-8.1	2-7.03	47-88.7	58.9-94.5	0.04-0.06	0.08-0.76			105-119	95-136	55.2-66	10-78
SP-23	6.3-7.1	6.86-7.9	15.3-40.47	22.6-68.4	98.42-112	150-304.6	0.11-0.97	2.04-6.2			127-357	294-778	70-81	105-220
SP-24	6.4-7.4	6.9-7.3	11.4-27.5	2.2-15.4	82.46-118	44.6-91.8	<0.04-0.18	<0.04-1.15			198-276	144-267	50-84	42-83
SP-30	6.74-7.3	6.9-7.5	3.1-61.4	0-29.83	26.5-100.5	129.6-226.67	0.01-0.18	<0.04-0.34			193-217	166-320	89-97	26-61
SP-31	6.61-7	6.2-7.1	0-81.6	11.4-34.39	70-166	38.4-224.39	<0.02-0.24	<0.04-3.95			114-263	100-319	44-89	41-50
SP-35	7.3-7.7	7.3-7.6	8.4-11.6	10.8-15	139.4-216.2	110-251.4	<0.04-0.52	0.07-0.94			176-276	180-276	24-56	36-41
SP-36	6.9-7.5	7.4	0-24.32	14.6	46.6-176	174.6	0.06-2.12	1.67			22-262	200	33-54	46
SP-38	7.3-7.9	7.5-7.8	0-24.8	2.8-13.4	136-212	142.4-178.6	0.05-0.64	0.09-0.22			100-215	151-229	12-61	20-44
SP-39	7.27-7.6	7.7-8.4	7-15.6	<1.5-8	155.8-169.6	47-190	<0.04-34.7	0.07-0.33			0.06-184	136-230	<10.0-36	17-50
SP-41	6.6-7.3	7.6	9-14	17	60-178	167	.02-.23	0.53	<0.02-.06	.03	80-216	172	20-42	32
SP-44	7.0-7.4	7.3	24-46	0	188-206	173	<0.04-.08	0.18	<0.02-.02	<0.02	235-251	301	36-43	45
SP-45	6.7-7.1	6.7-6.8	15.77-56.24	4.4-11.2	115.8-168.91	53.4-127	<0.04-4	0.09-0.24			160-236	76-120	34-49	16-43
SP-93	7.2-7.8	7.2-7.6	0-52	5.8-9.6	63.65-32.48	122.6-160	0.01-4.5	0.16-0.95			80.4-240	142-190	17-37	33-34
SP-172	7.3-7.7	7.1-7.9	7.6-19.4	7.2-16.8	165-212.4	170-200	0.09-1.27	0.04-0.24			261-280	239-310	23-42	29-42
SP-173	6.8-8.2	7.4-7.8	6-21	6-8	79-132	96-133	<0.04-.25	.04-.13	<0.02-.02	<0.02	124-168	146-182	21-44	31-49
SP-174	7.2-7.9	6.1	16-40	9	20-204	30	<0.04-.15	.26	<0.02	<0.02	186-200	182	10-38	18
SP-175	7.4-7.7	7	17-47	5-8	166-238	31	.1-7	.41	.05-2.0	.03	272-401	66	24-51	12

TABLE 6
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Ohio Valley Coal Company
Application Area D - 0360-7

Ground Water Quality Summary Pre and Post Mining Water Quality Application Areas: R-0360-2, D-0360-1, D-0360-2, D-0360-3

Supply No.	pH		Acid		Alk.		Iron		Manganese		Hardness		Sulfate	
	Pre SU	Post SU	Pre mg/l	Post mg/l	Pre mg/l	Post mg/l	Pre mg/l	Post mg/l	Pre mg/l	Post mg/l	Pre mg/l	Post mg/l	Pre mg/l	Post mg/l
SP-176	7.1-7.6	6.9	11-31	4-9	150-201	131-166	<0.04-.18	.07-.15	<0.02-.04	<0.02	216-304	210-252	33-49	25-49
SP-198	7.8-7.7	6.9-7.4	5.8-31.8	7.2-20	159.6-198.6	123.6-280	<0.04-0.15	0.04-0.6			173-252	216-378	24-43	53-70
SP-216	6.8-7.7	6.7-6.8	4-74	5-10	70-119	51-53	.05-.52	.14-.17	<.02-.06	<0.02	90-147	75-81	15-38	23-27
SP-220	6.8-7.7	7.6	5.6-25.4	4.4	20.4-196.8	150	0.08-1.66	5.2			58-264	188	10-54	44
W-24	7.1-7.93	6.9-8.2	9.4-18.3	6.27-27.6	96-148	116.47-169.86	<0.02-0.09	0.08-10.5	0.02-0.04	0.02-0.69	121-163	154-200	37.6-61	39-77
W-25	6.88-7.7	7.4-7.7	4.2-67.3	10.26-38.8	83-112	114.21-166	0.04-.14	<0.04-2.78	<0.02-0.04	<0.02-0.56	139-157	188-215	76-80	30-40
W-26	7.28-7.57	7.3-7.5	16.2-37.5	22.23-51.2	186-214	204.2-229.6	0.04-0.1	0.06-0.74	0.03	<0.02-0.07	217-308	258-280	61-75.2	23-49
W-28	7.2-7.41	7-7.5	18-23.4	7.6-62.8	163-189	25.3-266.8	1.03-1.34	<0.04-7.9	0.18-0.27	<0.02-0.41	238-261	266-304	56-69	14-35
W-30	7.49-7.65	7.3-7.6	8.3-11.6	10-20.71	14-206	108-248.4	0.04-0.09	0.04-1.24	0.01-0.03	<0.02-0.07	259-289	296-312	56-59	43-59
W-33	6.9-7.61	7.1-7.8	14.52-53.2	20.2-34.8	150.1-196	22.23-186.6	<0.04-0.17	<0.04-0.11	<0.02-0.03	<0.02-0.08	214-242	155-240	34-58	32-115
W-34	6-8.09	6.5-7.1	12.2-24.13	0-33	29.64-160.17	48.6-113	0.11-3.01	<0.02-1.41	<0.02-0.85	<0.02-10.05	136-282	155-190	49-67	5
W-38	7.3-7.57	6.9-7.6	9.05-17.3	11.4-43.2	19.4-231	171-223.4	0.09-8.54	0.07-5.62	<0.02-0.26	0.02-0.2	198-233	198-272	37.6-46.4	29-46
W-44	7.1-7.5	7.3-8.9	1.2-71.4	0-40.8	76-343.9	29.8-268	0.04-1.98	<0.04-2.09	<0.02-0.45	<0.02-0.07	219-371	111-264	<10-140	33-100
W-51	7.3-7.8	7.8	0-40	14	158-243	286	0.04-.65	0.77	<0.02-.23	0.05	84-277	97	26-68	44
W-52	7.4-7.8	7.4-8.2	0-28.4	4.2-20.0	141-255.6	192-213	<0.04-.022	0.06-0.25			91-280	256-303	31-62	47-63
W-53	7.4-7.8	7.4-7.8	0-16	8-16	96-214	171-213	<0.04-1.3	.16-.75	<0.02-.05	.06-.08	84-256	228-242	11-56	35-49
W-54	7.3-7.7	7.4	0-19.2	8.8-12	94-268	192-240	<0.04-3.06	0.91-2.7			76-232	56-120	11-71	86-109
W-55	7.3-7.6	7.7-8.3	0-54	4-11	184-214	177-221	<0.04-.24	.07-1.4	<.02-.09	<0.02-4.2	71-272	120-232	35-63	24-67

TABLE 6
Page 2 of 3

T E 6

Ohio Valley Coal Company
Application Area D - 0360-7

Ground Water Quality Summary Pre and Post Mining Water Quality Application Areas: R-0360-2, D-0360-1, D-0360-2, D-0360-3

Supply No.	pH		Acid		Alk.		Iron		Manganese		Hardness		Sulfate	
	Pre SU	Post SU	Pre mg/l	Post mg/l	Pre mg/l	Post mg/l	Pre mg/l	Post mg/l	Pre mg/l	Post mg/l	Pre mg/l	Post mg/l	Pre mg/l	Post mg/l
W-56	7-7.6	7.5-7.8	0-86.4	10.6-13	156-300	207-250	0.02-1.73	0.10-5.8			24-403	244-313	31-84	35
W-57	6.8-7.8	7.3-7.8	0-22	11-17	87-261	179-208	0.04-0.45	.15-.46	<0.02-.02	.02-.06	63-184	200-252	31-46	12-77
W-58	7.2-7.8	7.7	0-15	9	150-335	215	<0.04-.08	0.08	<0.02-0.3	<0.02	72-196	112	41-61	43
W-92	6.9-7.0	7.2-7.4	16-72	32-131	66-127	.83-100	.65-2.2	<0.02-2.9	<0.02-.02	.02-.11	162-239	72-250	93-100	70-819
W-214	6.4-6.8	6.6-7.6	0-37.24	7.36	116-172	33-50	0-.30	<0.02-.71			100-276	72-260	44-716	17-110
W-215	7.5-8.3	6.8-7.36	0-20.3	4.2-19	189-380	68-150	1.21-0.12	0.6-3.8			20-200	72-160	14-186	89-41
W-216	7.2-7.6	7.39-8.4	11.4-28.5	8.8-34	236-27	300-380	0.0-0.3	.48-.95			248-360	160-620	130-183	77-520
W-260	6.9-7.3	7.2-7.3	0-39.71	33-46	3315-380	310-360	0.02-.87	.07-.41			168-446	380-470	40-165	50-95
W-282	7.4-7.9	7.4-8.1	2.4-17	3.2-25	182-250	169-335	0.17-2.3	.11-5.5	<0.02-0.1	.02-.16	199-227	60-253	38-43	40-84
W-282A	7.3-7.7	7.4-8.4	12.54-30.4	9.6-17.1	154.6-225.71	176-279	0.21-0.6	0.02-1.91			189-204	115-262	37-44	30-116
W-283	7.5-7.9	7.4-7.9	2.4-32	3.2-15.4	182-191	218-334	0.17-2.27	0.11-2.38			199-216	60-253	38-43	44
W-285	6.8-7.7	7.3-7.8	8.8-16.6	15.8-27	185-196	170-234	0.86-10.90	0.69-21			262-320	12-160	52-120	25-130
W-288	7.2-8.3	7.2-7.57	3.3-32.6	16-17	150-240	150-180	0.15-2.55	0.07-.13			180-423	210-380	36-91	44-55
W72	7.2	7.4-7.5	21-29	11-21	120-138	120	0.17-2.82	0.06-0.22			330-400	290-300	11-92	59-100

TABLE 6
Page 3 of 3

TABLE 7
OHIO VALLEY COAL COMPANY
APPLICATION AREA D-0360-8-7

per Dave Bertsch
on 4/15/98

Comparison of Predicted and Actual Hydrologic Impacts For
Application Area D-0360-2

<u>Supply</u>	<u>Predicted Impact</u>	<u>Actual Impact</u>
SP35	Minimal	Severe
SP36	Severe	Severe
SP38	Minimal	Severe
SP39	Moderate	Severe
SP41	Severe	Severe
SP44	Minimal	Severe
SP45	Severe	Severe
SP52	Minimal	Minimal
SP63	Severe	Severe
SP64	Severe	Severe
SP83	Minimal	Severe
SP84	Minimal	Severe
SP89	Minimal	Severe
SP90	Moderate	Severe
SP91	Moderate	Severe
SP92	Moderate	Severe
SP93	Moderate	Severe
SP94	Severe	Severe
SP162	Minimal	Severe
SP166	Minimal	Severe
SP167	Moderate	Severe
SP172	Moderate	Severe
SP173	Moderate	Severe
W50	Minimal	Severe
W51	Moderate	Severe
W52	Minimal	Severe
W53	Minimal	Severe
W54	Moderate	Severe

TABLE 7
Page 1 of 3

D0360-7
ORIGINAL

*per Dave Bartch
CM - 4/15/98*

TABLE 7
OHIO VALLEY COAL COMPANY
APPLICATION AREA D-0360-87

**Comparison of Predicted and Actual Hydrologic Impacts For
Application Area D-0360-2**

W55	Minimal	Severe
W57	Moderate	Severe
W58	Moderate	Minimal
W59	Minimal	Minimal
W60	Severe	Severe
W61	Severe	Severe
W62	Moderate	Severe
W72	Moderate	Moderate
W73	Minimal	Moderate
W75	Minimal	Moderate
W77	Minimal	Minimal
W78	Moderate	Minimal
W80	Moderate	Severe
W81	Moderate	Severe
W82	Moderate	Severe
W83	Severe	Minimal
W84	Minimal	Minimal
W85	Minimal	Minimal
W92	Minimal	Severe
W93	Moderate	Severe
W94	Minimal	Moderate
W184	Severe	Moderate
W186	Severe	Minimal
W187	Severe	Severe
W188	Severe	Minimal
W189	Severe	Minimal
W190	Severe	Severe
W208	Severe	Severe
W209	Severe	Severe

TABLE 7
OHIO VALLEY COAL COMPANY
APPLICATION AREA D-0360-8

*pe Dave Bartsch
6m 4/15/98*

**Comparison of Predicted and Actual Hydrologic Impacts For
Application Area D-0360-2**

W213	Moderate	Minimal
W214	Severe	Minimal
W215	Severe	Minimal
W216	Severe	Minimal
W217	Severe	Minimal
W260	Severe	Severe

Summary

	<u>Correct Prediction</u>	<u>Close Prediction*</u>	<u>Wrong Prediction*</u>
Springs	7	8	8
Wells	12	15	13

*Close: prediction was off by a category from actual impact (ex. Prediction was minimal and actual was moderate)

*Wrong: prediction was off by two categories from the actual impact (ex: prediction was minimal and actual was severe)

D0360-7

APPENDIX A

Well Hydrographs - Application Areas D-0360-2 and D-0360-3

ORIGINAL

D0360-7

APPENDIX A

Well Hydrographs – Application Areas D-0360-2 and D-0360-3

Changes To Observed Impacts Between D-6360-6 and D-0360-7 PHCs

Supply	D-0360-6 Impacts	D-0360-7 Impacts
W-62	Moderate	Severe
W-73	Minimal	Moderate
W-184	Severe	Moderate
W-186	Moderate	Minimal
W-187	Minimal	Severe
W-283	Moderate	Severe

D0360-7
ORIGINAL

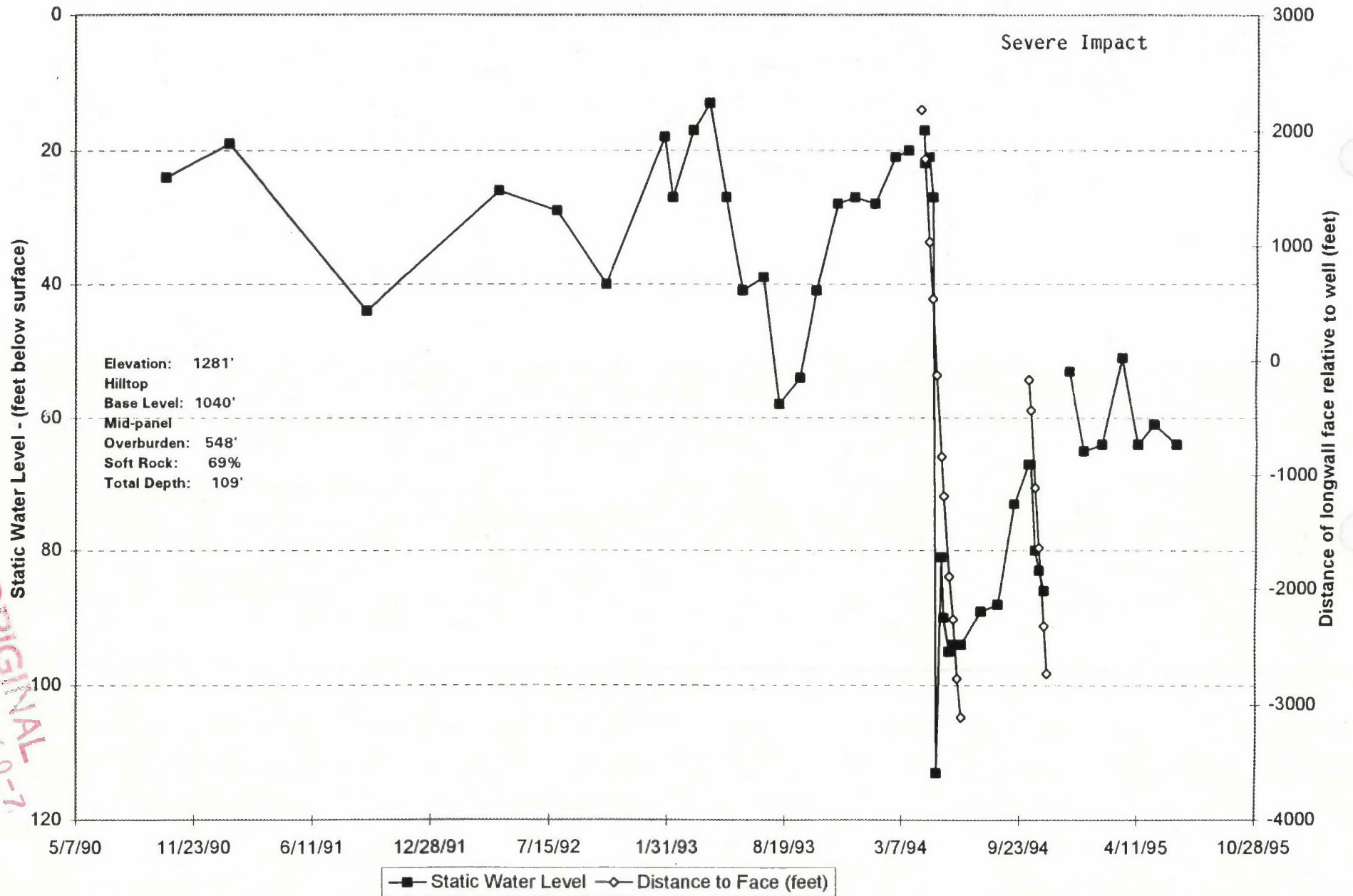
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Static Wa
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D0360-7



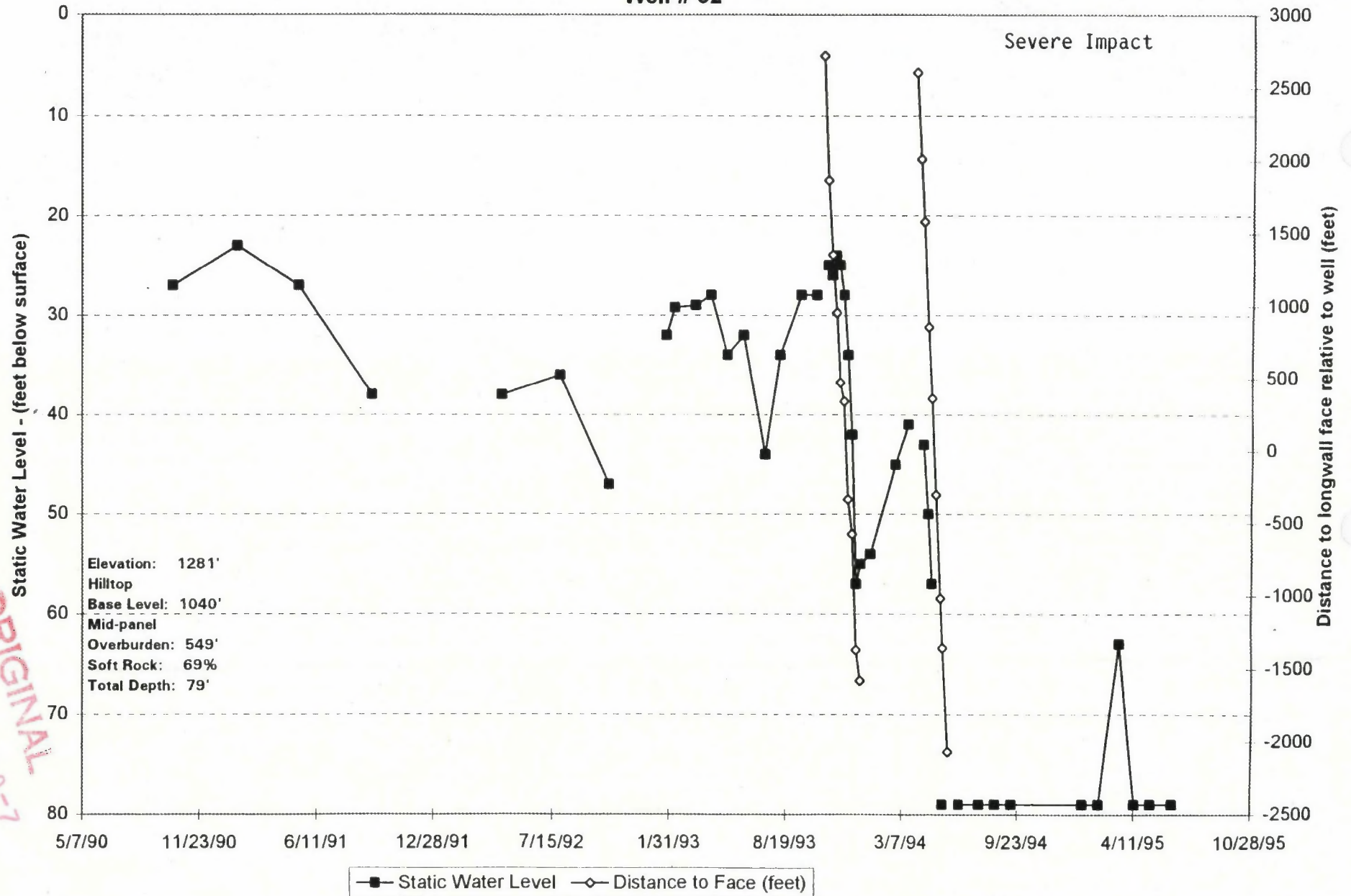
Well # 51



Prepared by: Moody and Assoc., Inc. 4/13/97

TOVCC 21488

Well # 52



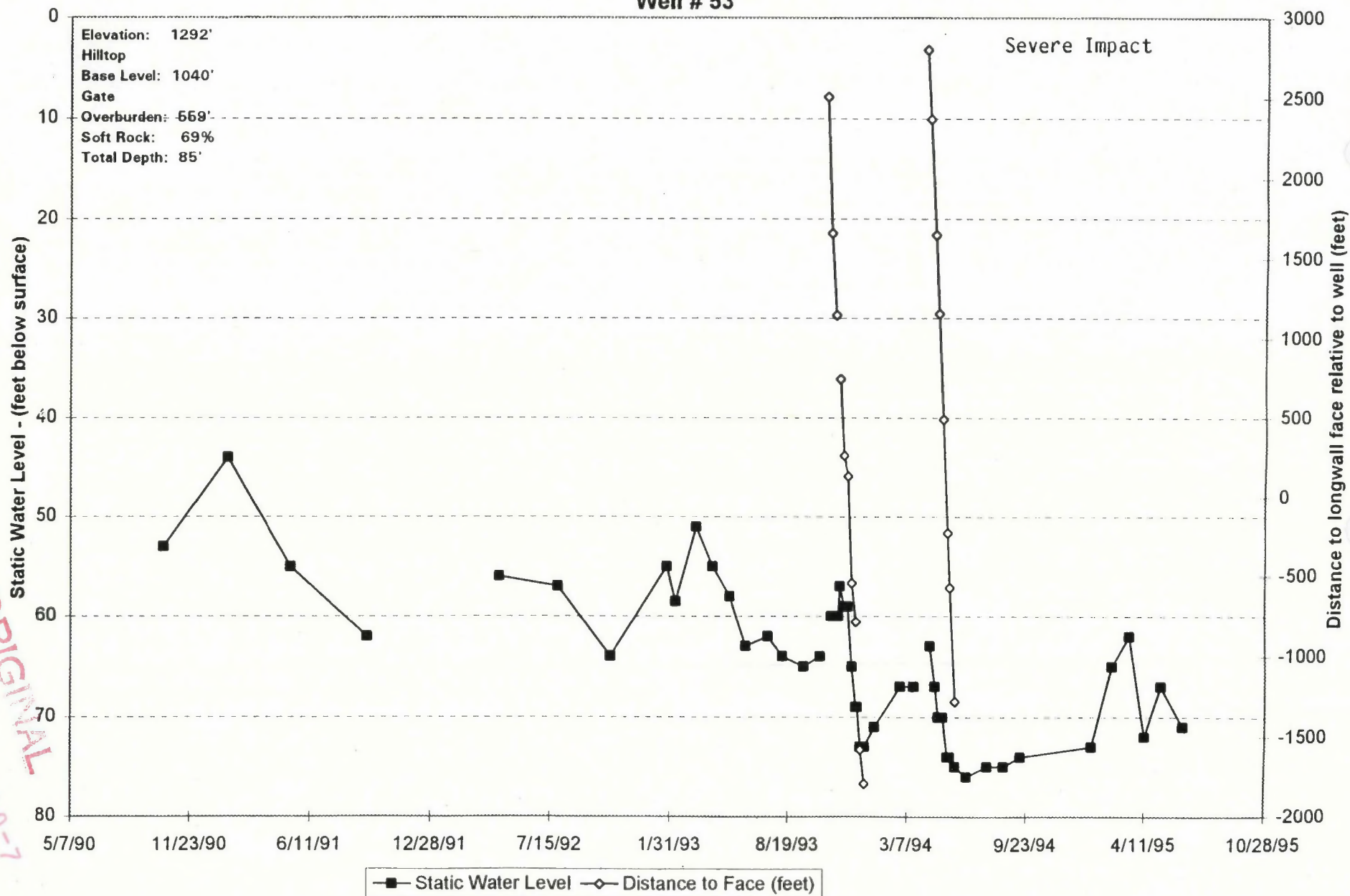
Prepared by: Moody and Assoc., Inc. 4/13/97

TOVCC 21489

Well # 53

Elevation: 1292'
 Hilltop
 Base Level: 1040'
 Gate
 Overburden: 669'
 Soft Rock: 69%
 Total Depth: 85'

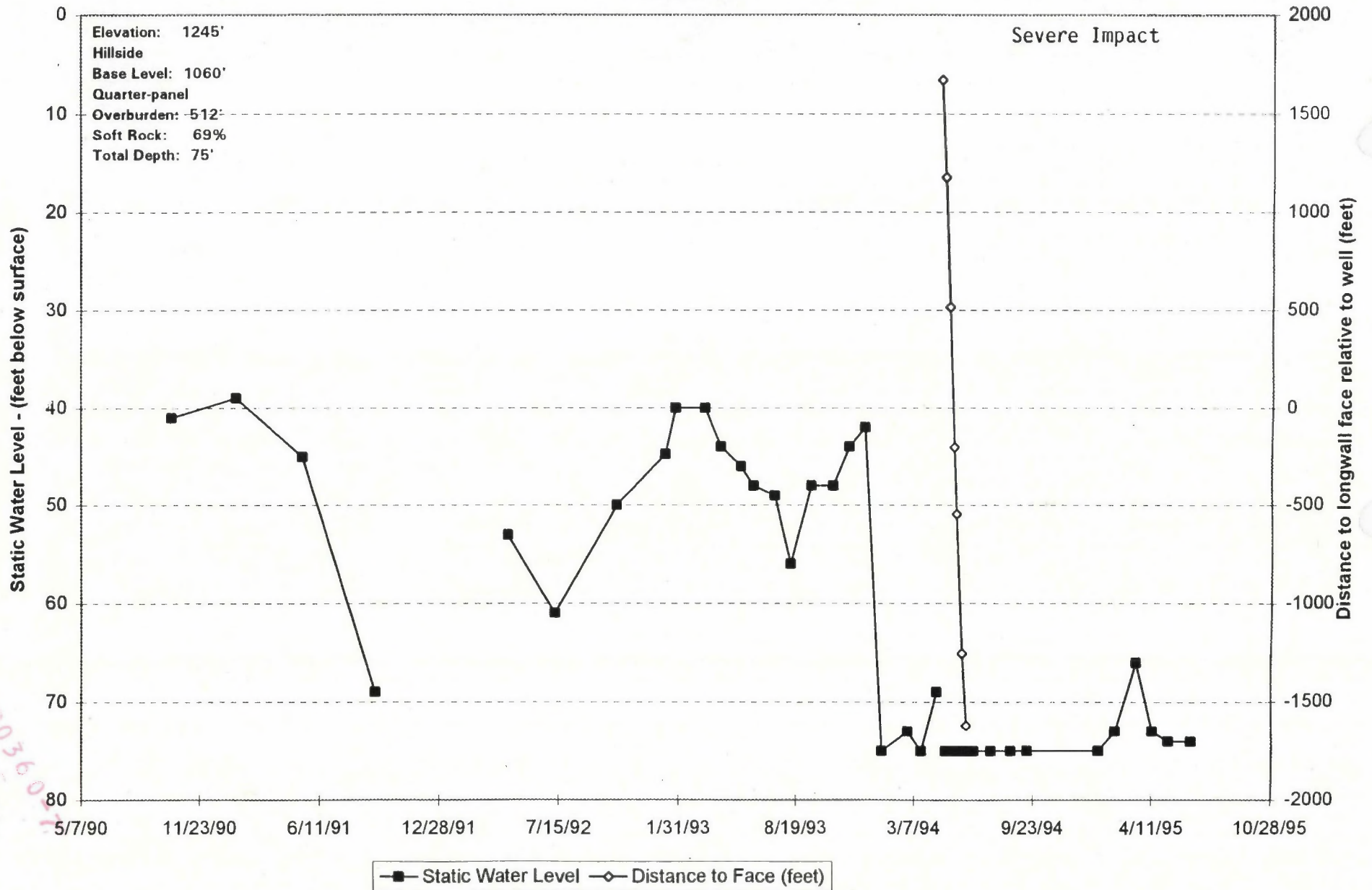
Severe Impact



Prepared by: Moody and Assoc., Inc. 4/13/97

TOVCC 21490

Well # 54

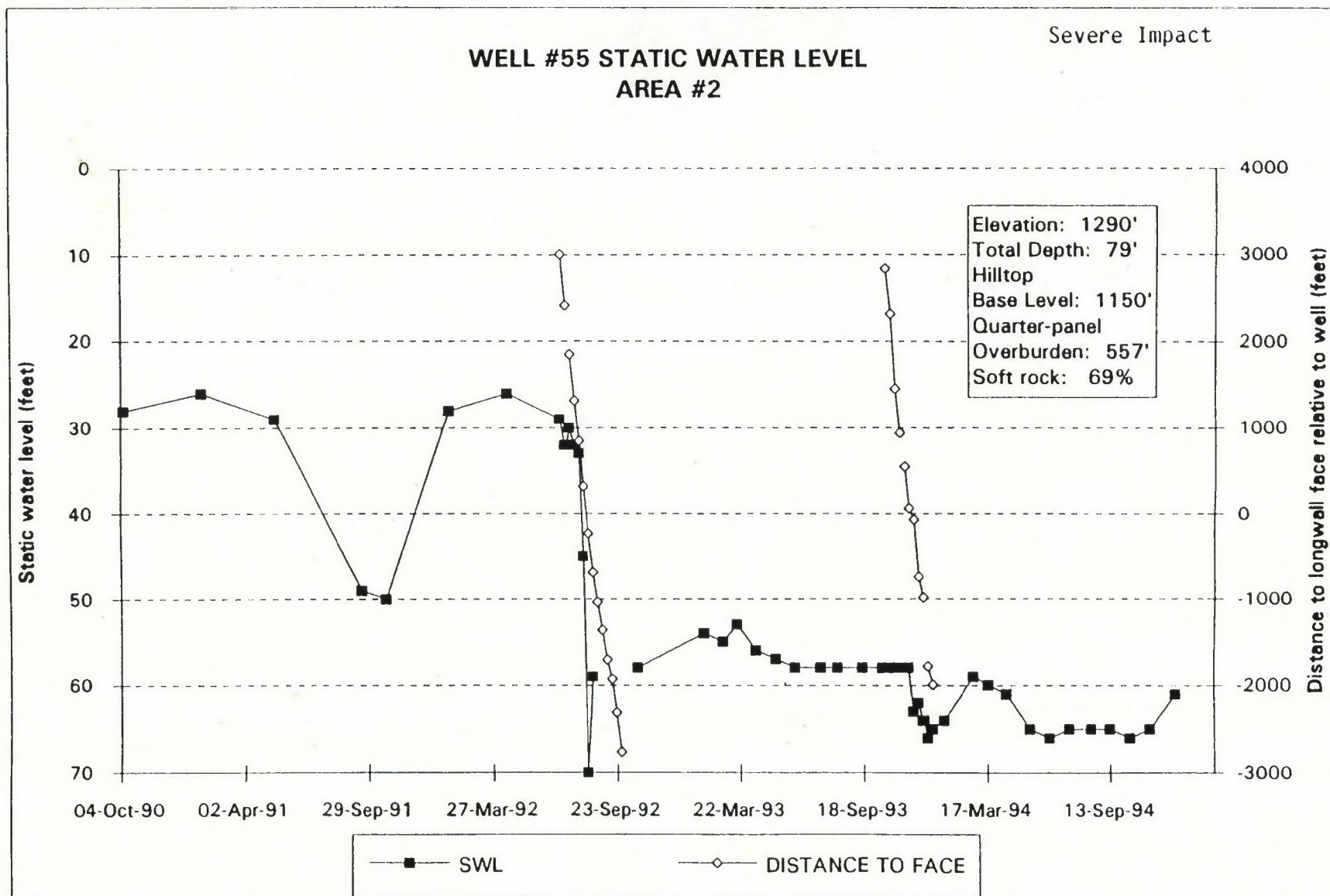


Prepared by: Moody and Assoc., Inc. 4/13/97

TOVCC 21491

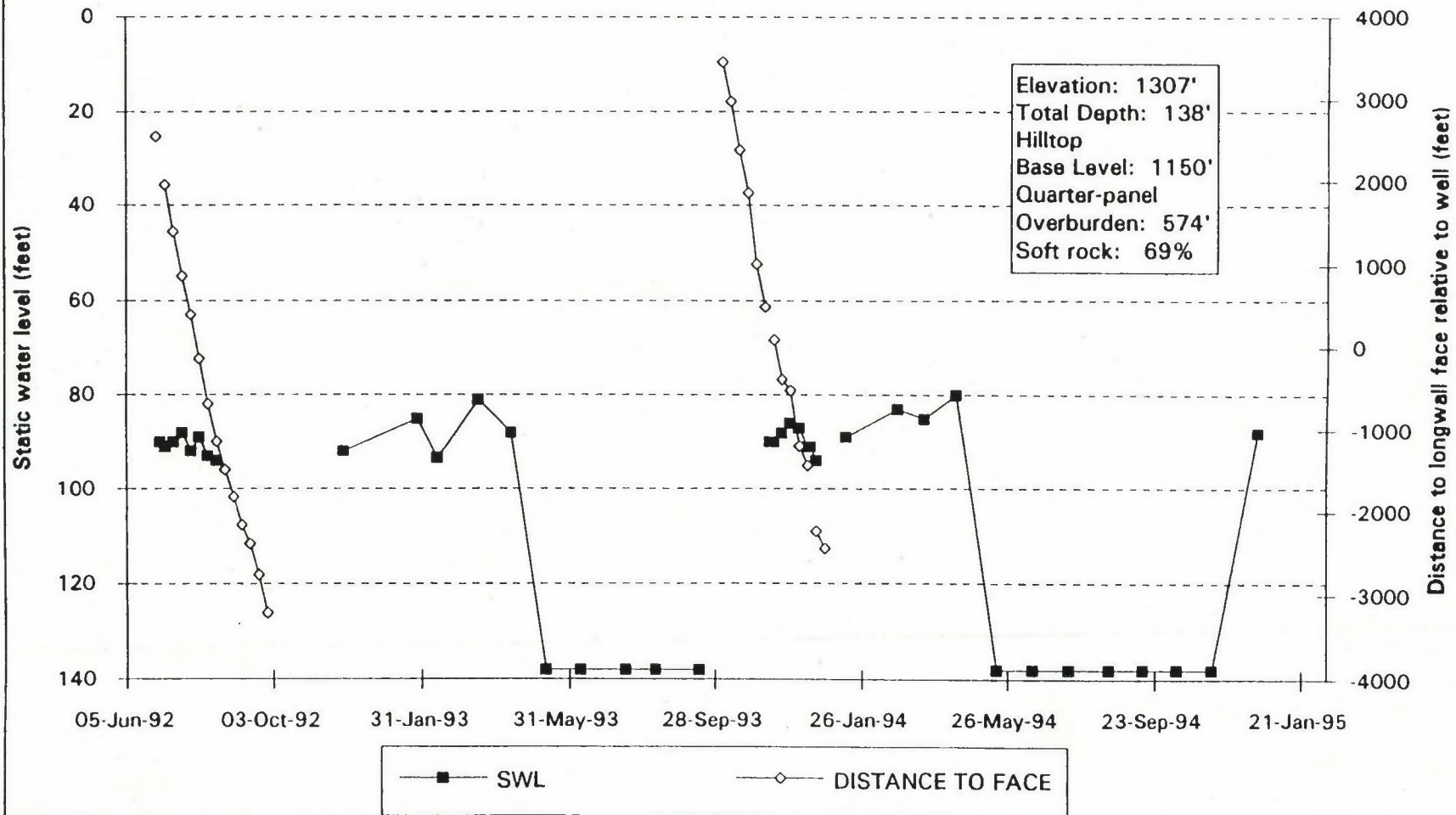
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D0360-7



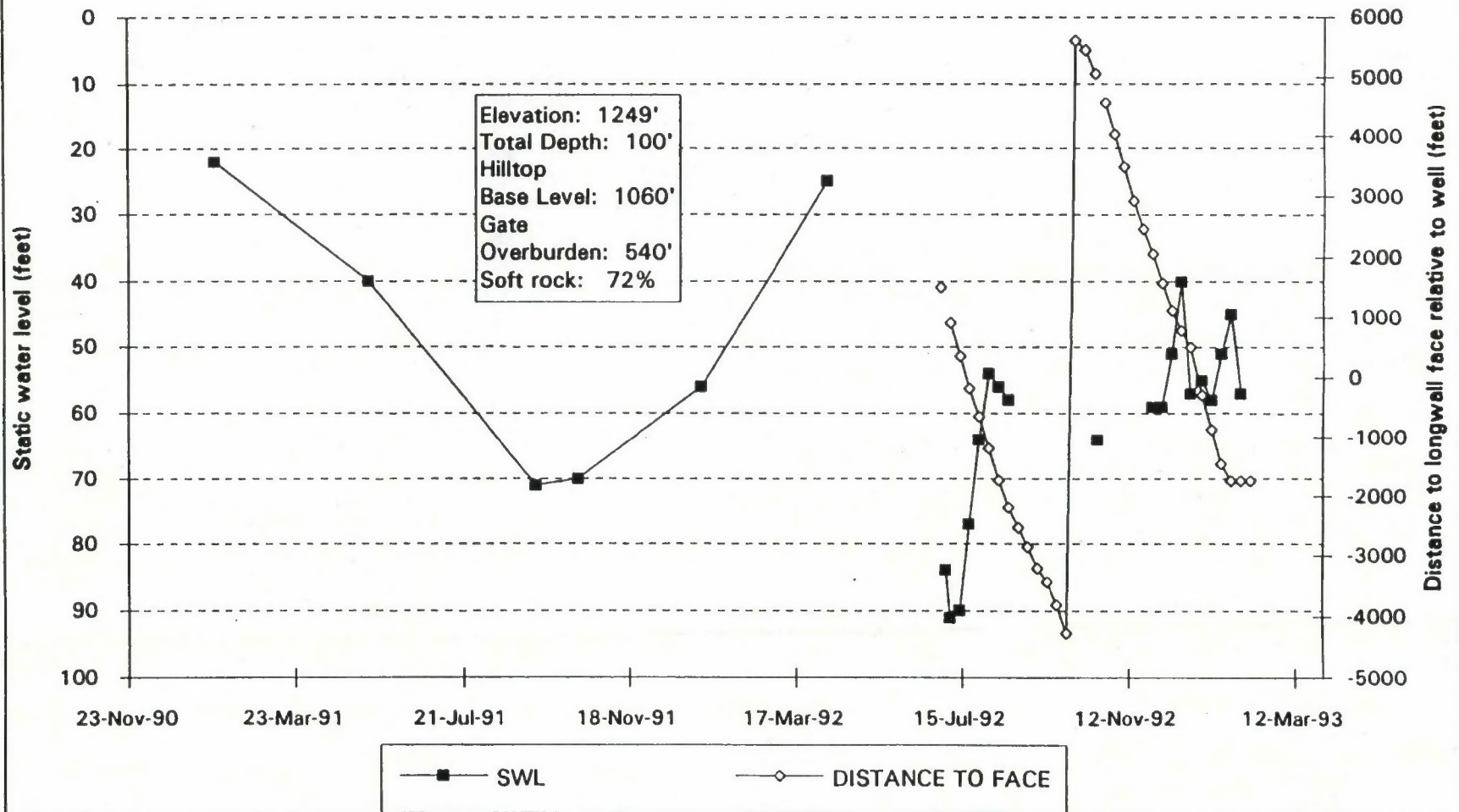
Severe Impact

WELL #57 STATIC WATER LEVEL AREA #2



WELL #58 STATIC WATER LEVEL AREA #2

Minimal Impact

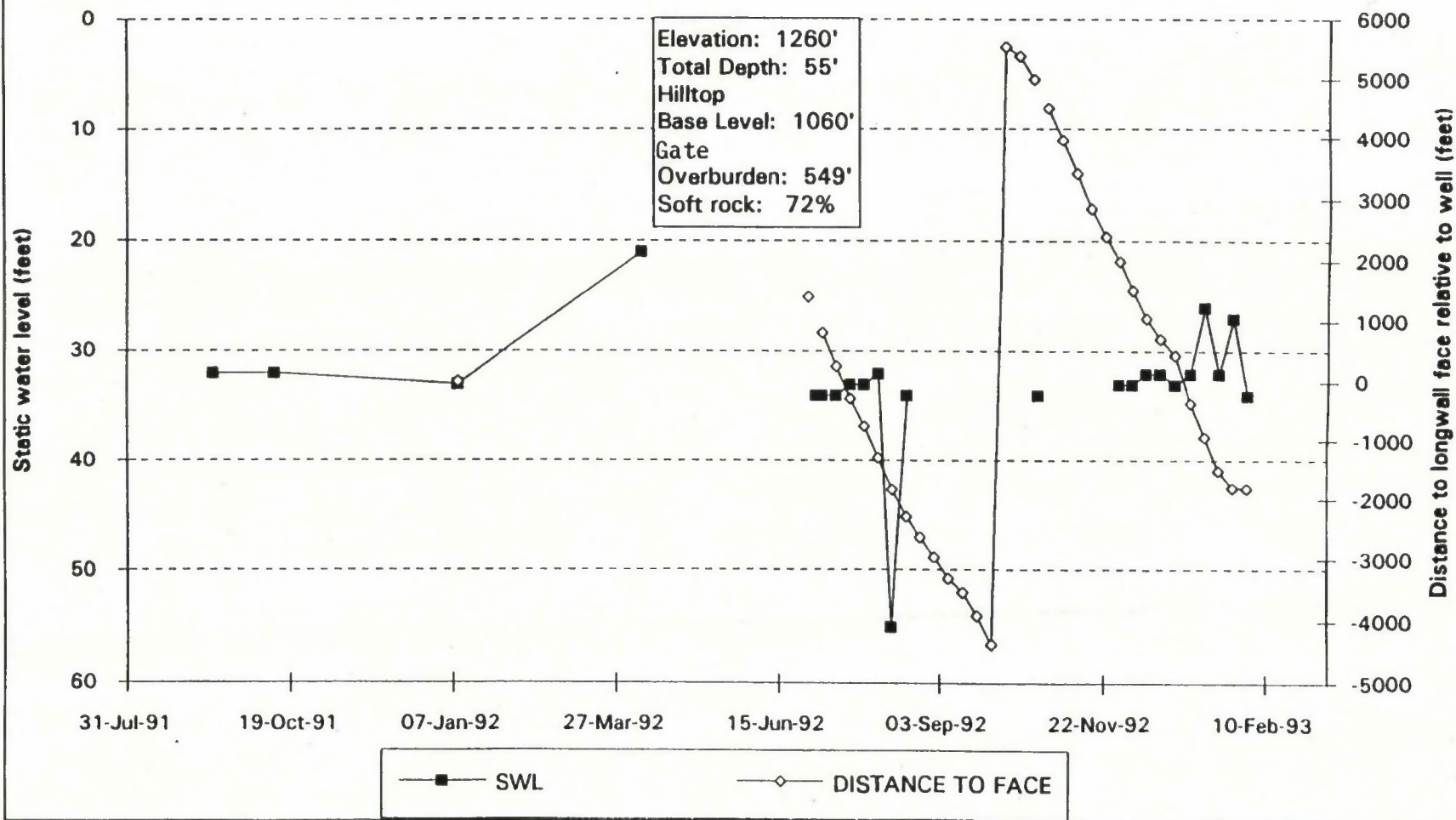


ORIGINAL

DO NOT WRITE

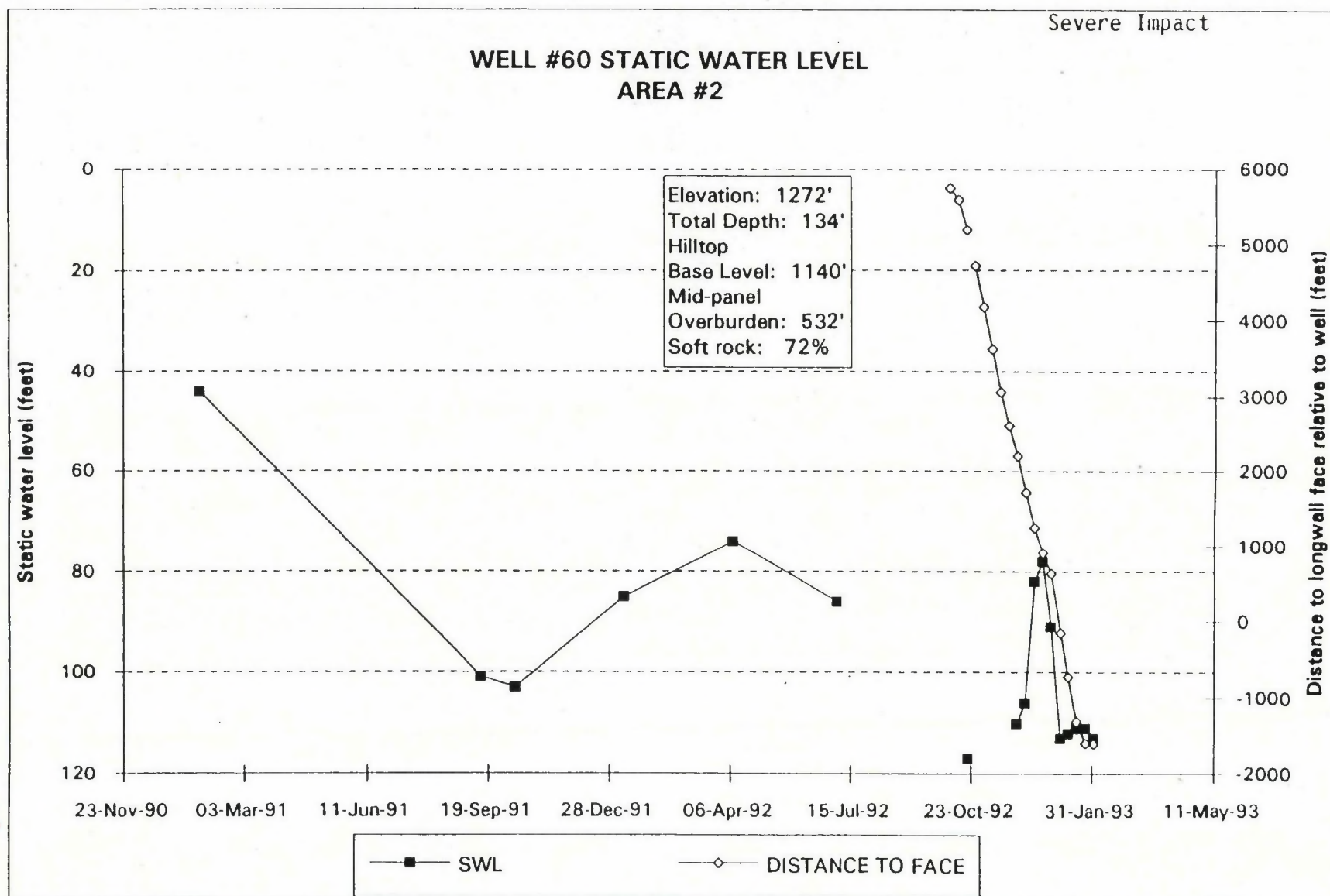
WELL #59 STATIC WATER LEVEL AREA #2

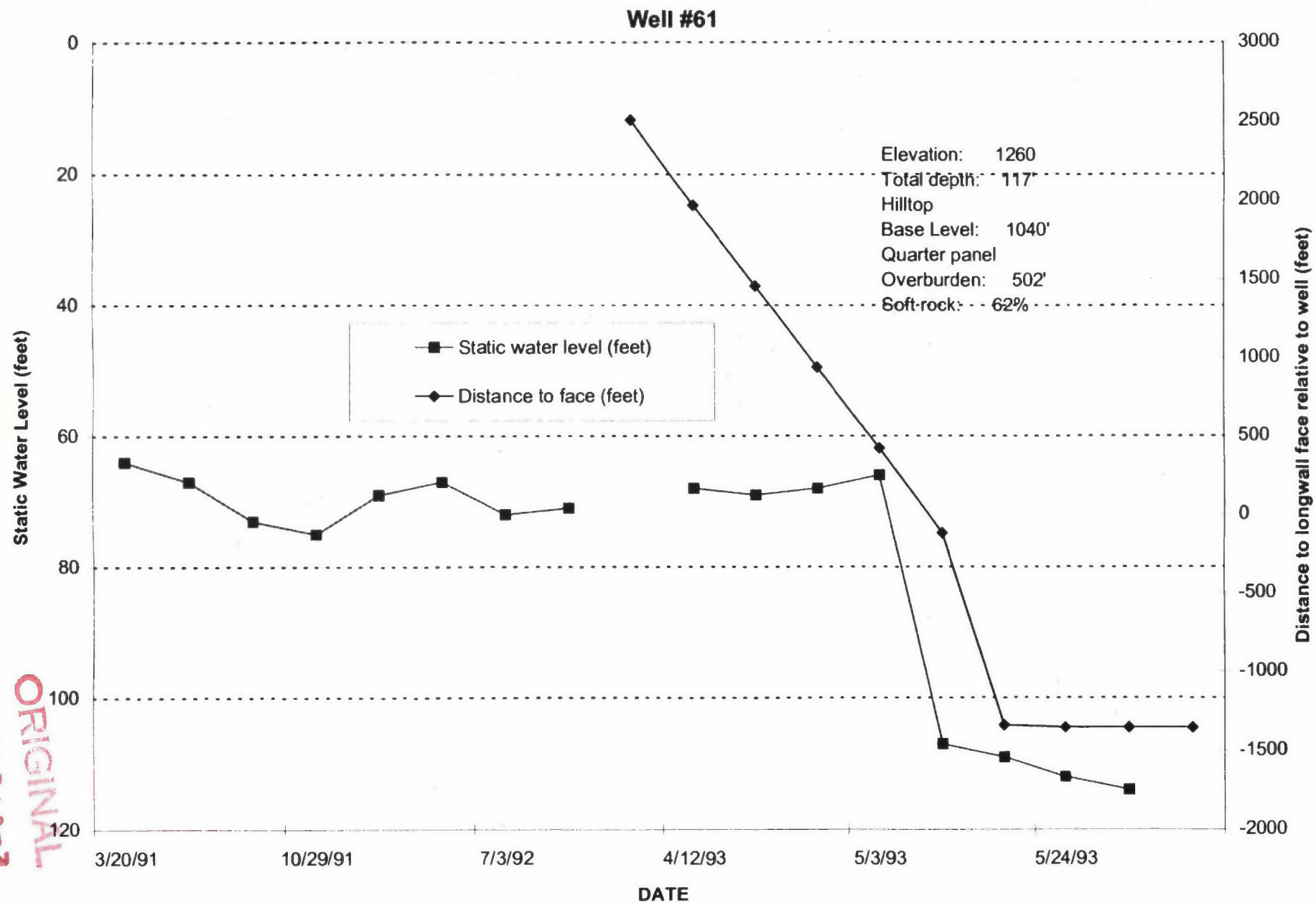
Minimal Impact



ORIGINAL
D0360-7

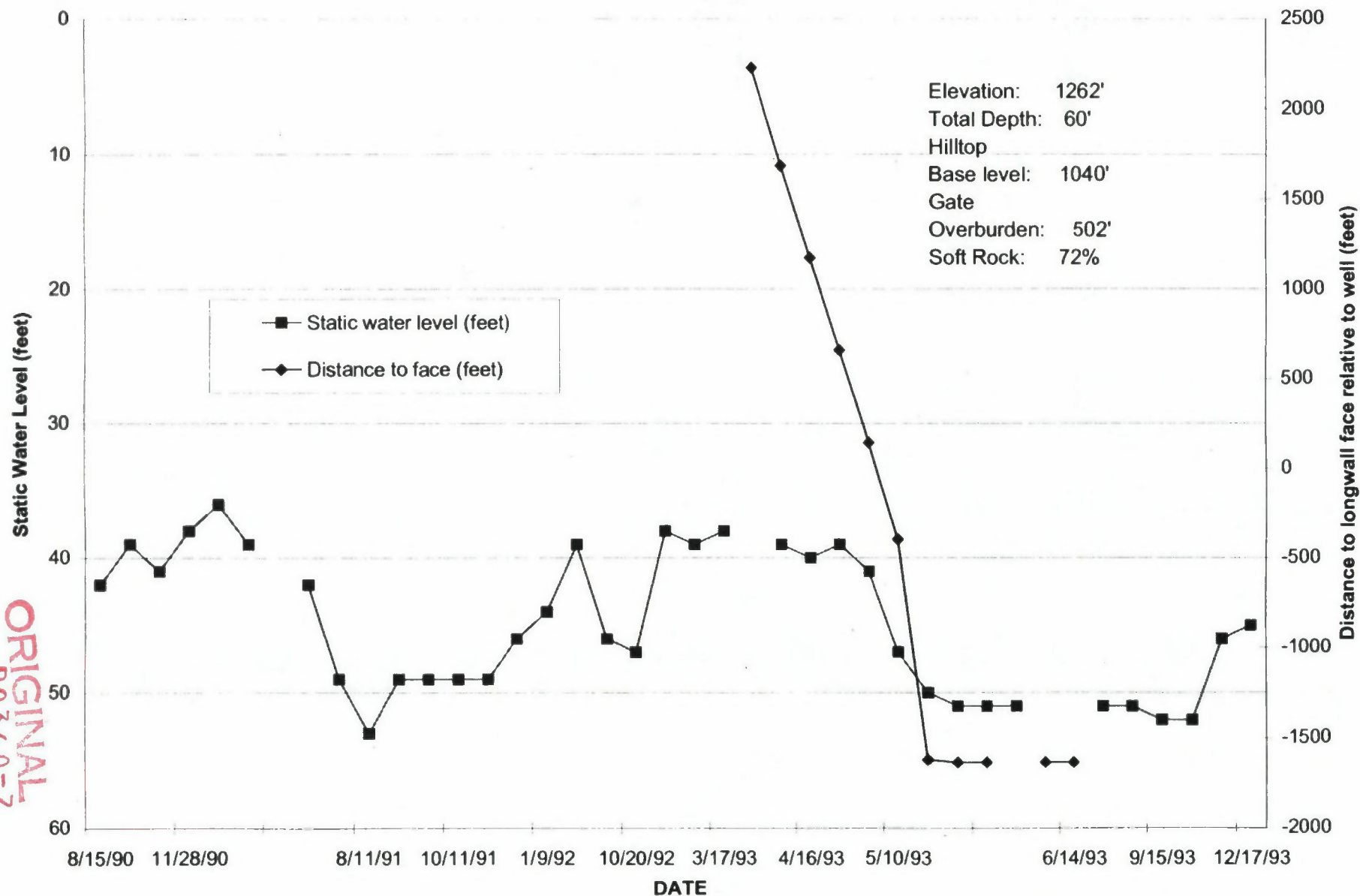
ORIGINAL
D0360-7





Well # 62

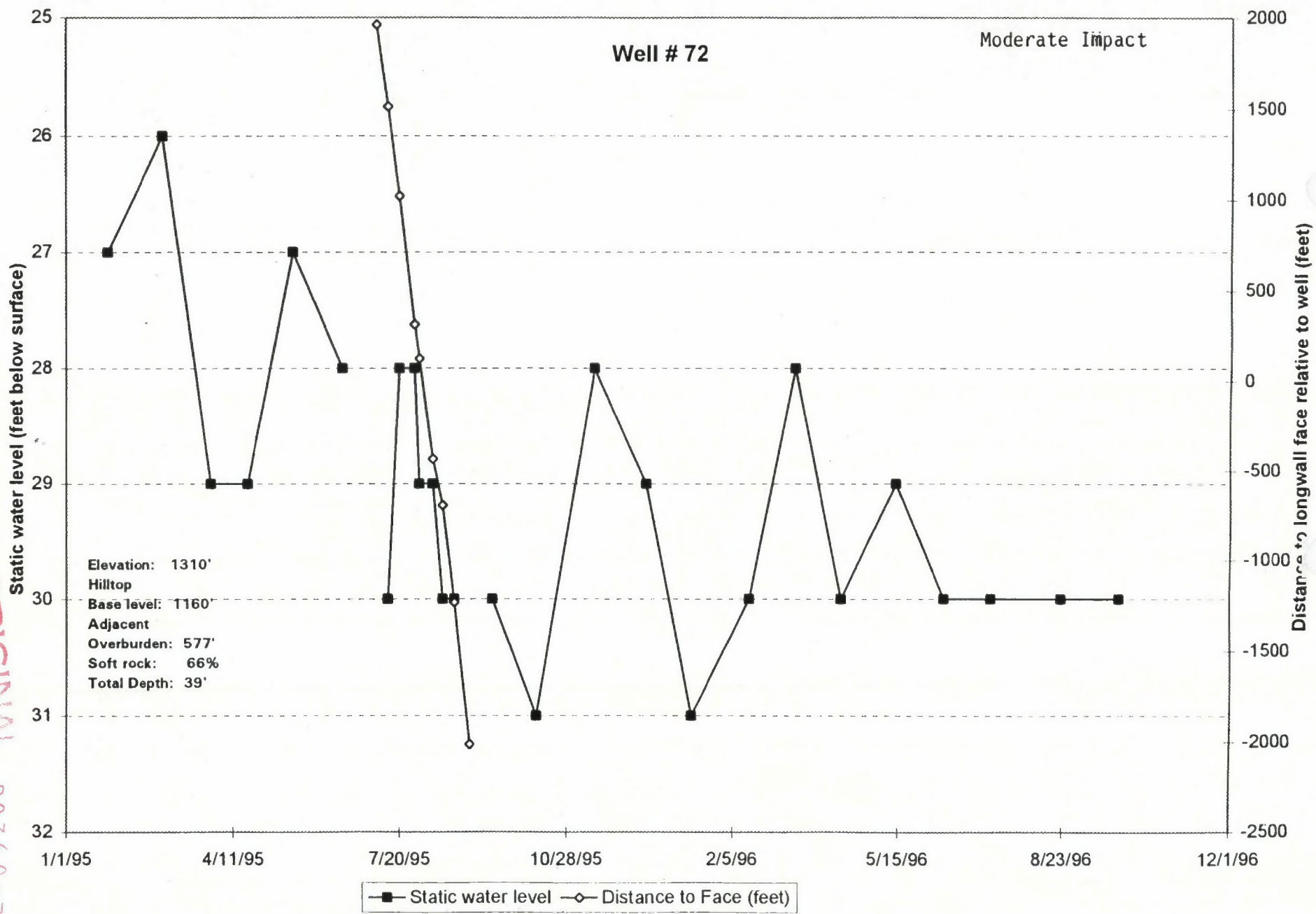
Elevation: 1262'
 Total Depth: 60'
 Hilltop
 Base level: 1040'
 Gate
 Overburden: 502'
 Soft Rock: 72%



ORIGINAL
 D0360-7

APR 01 1998

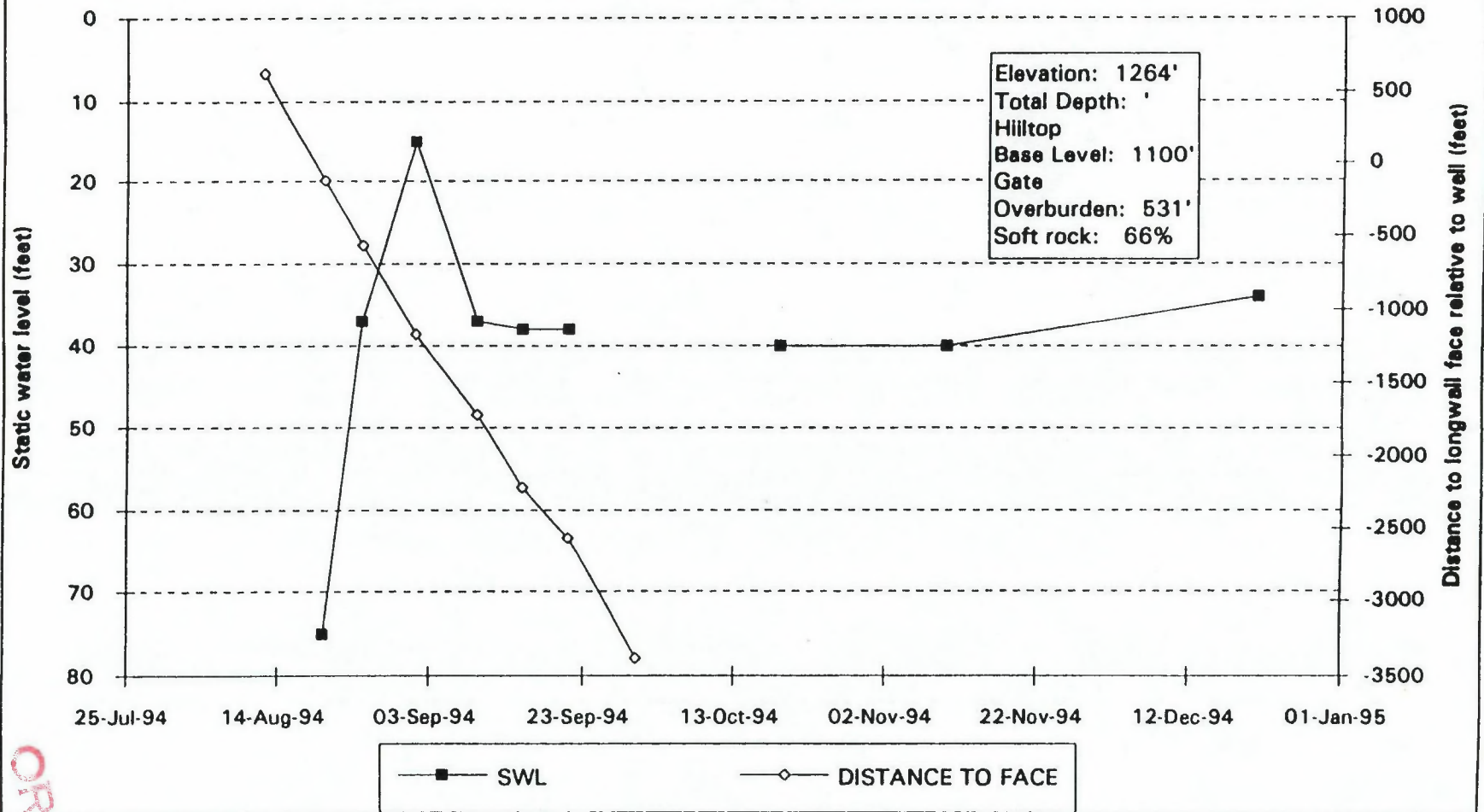
ORIGINAL 00360-7



Prepared by: Moody and Assoc., Inc. 4/14/97

WELL #73 STATIC WATER LEVEL AREA #3

Moderate Impact

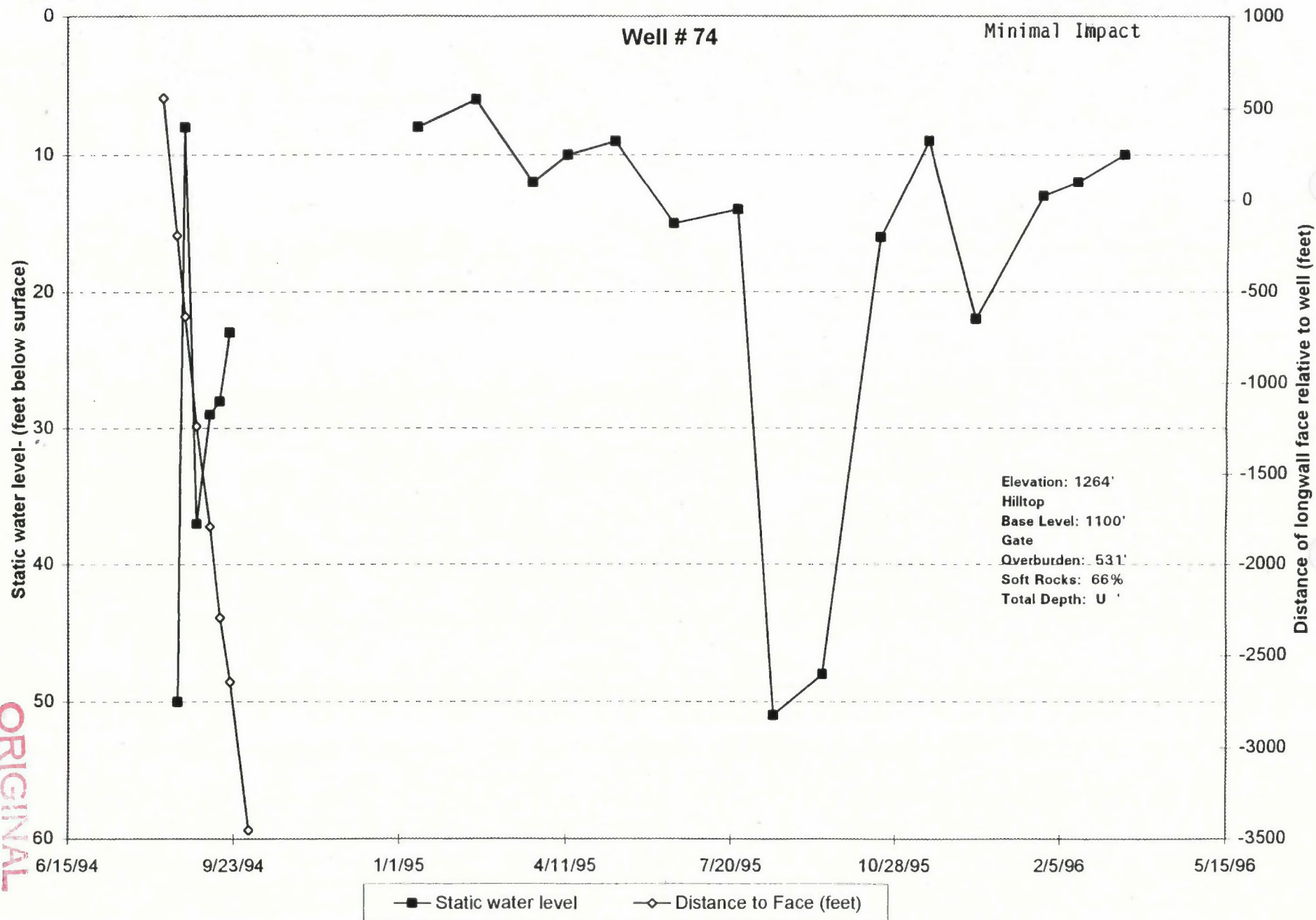


JAN 30 1998

00360-7

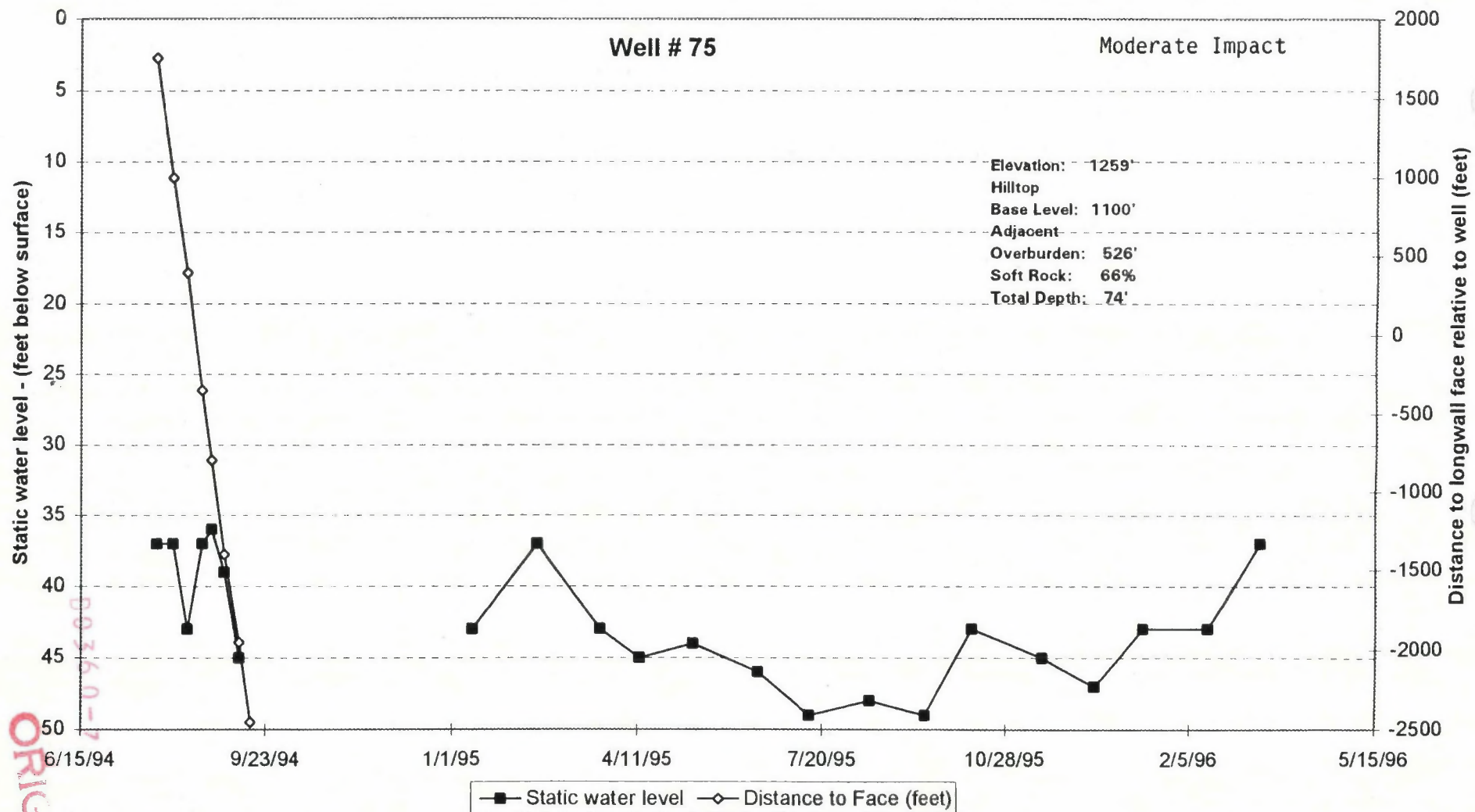
ORIGINAL

ORIGINAL
00360-7



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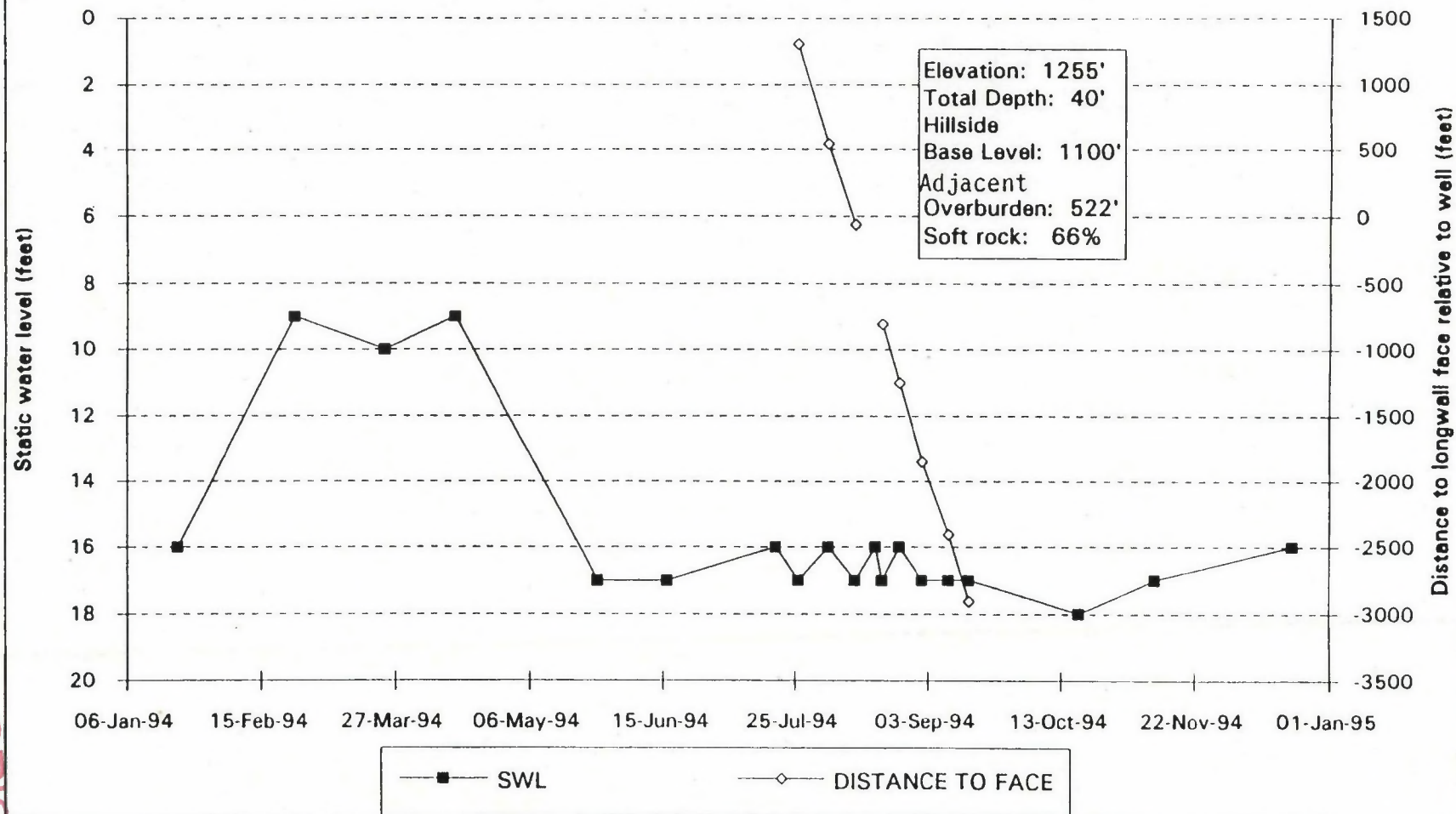


Prepared by: Moody and Assoc., Inc. 4/13/97

TOVCC 21502

Minimal Impact

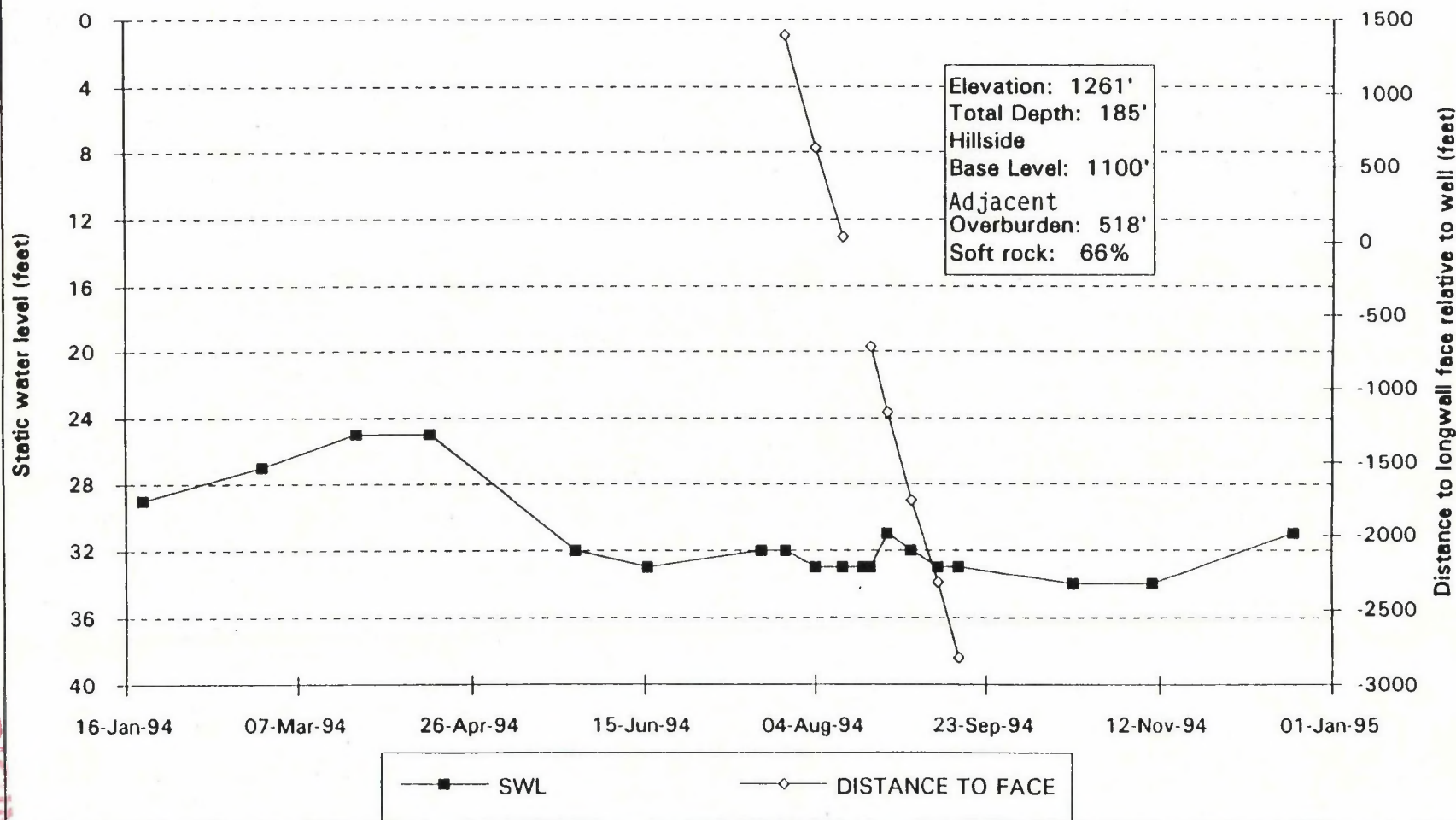
WELL #77 STATIC WATER LEVEL AREA #3



D0360-7
ORIGINAL

Minimal Impact

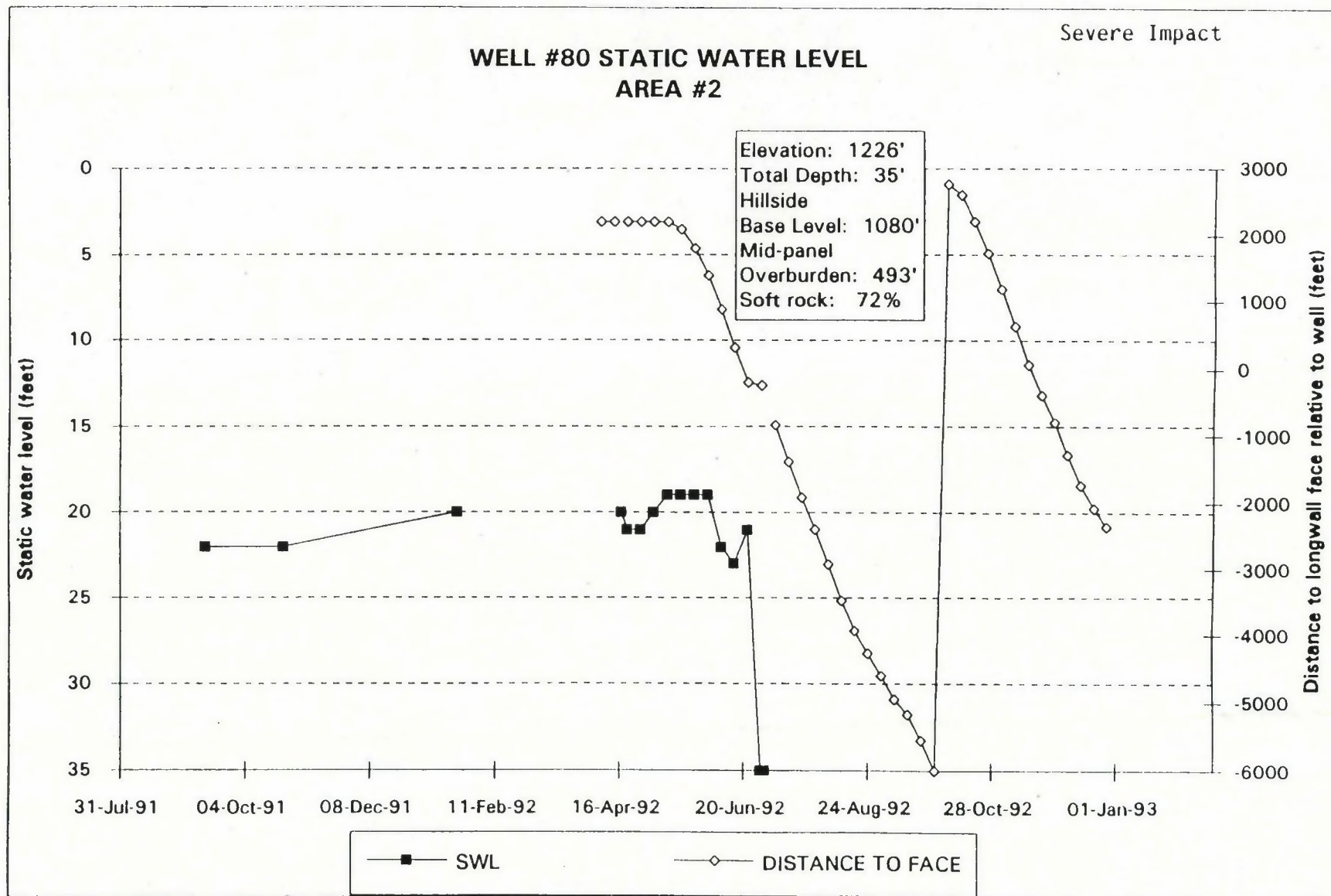
WELL #78 STATIC WATER LEVEL AREA #3



ORIGINAL
D0360-7

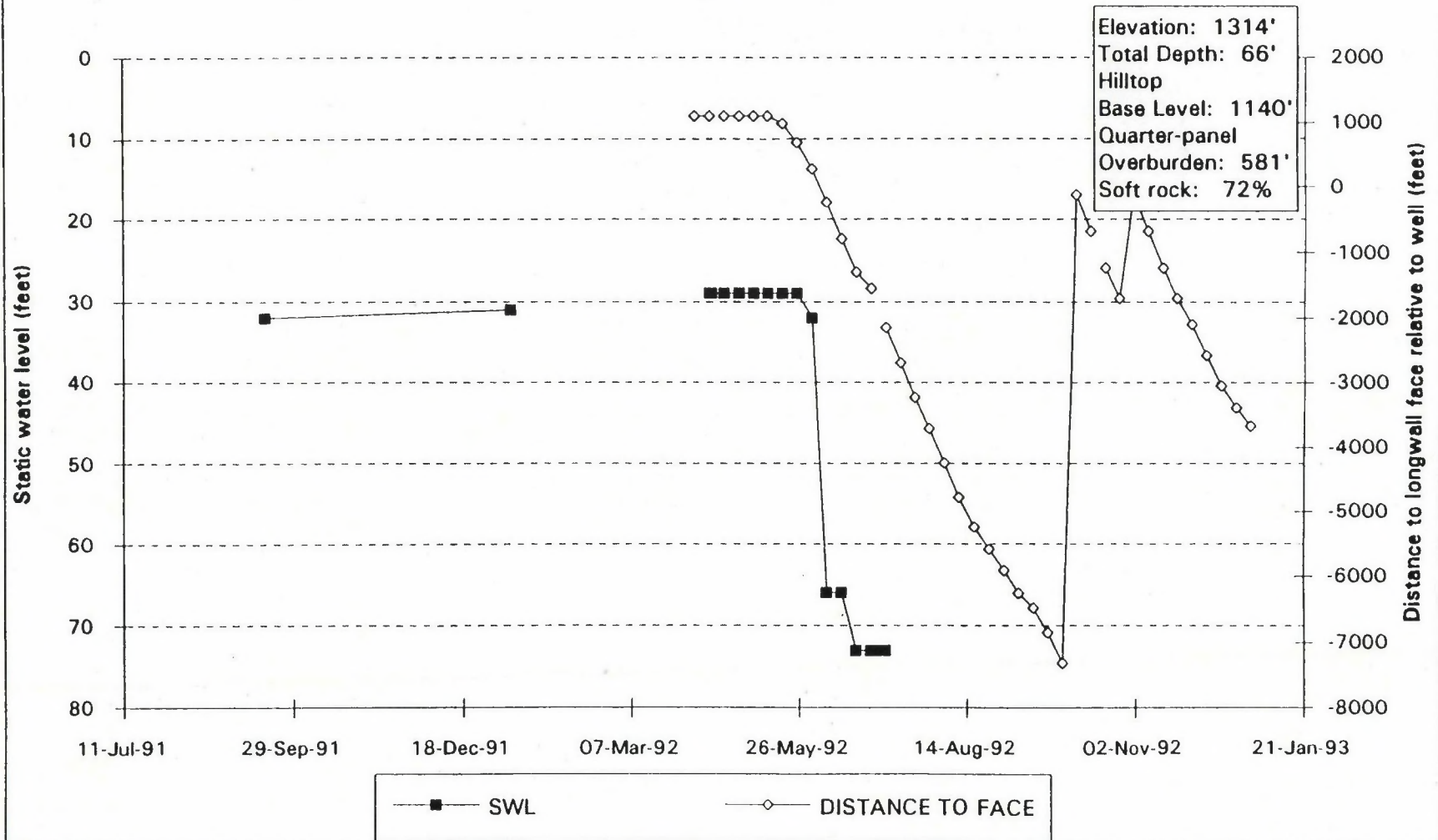
ORIGINAL

D0360-7



Severe Impact

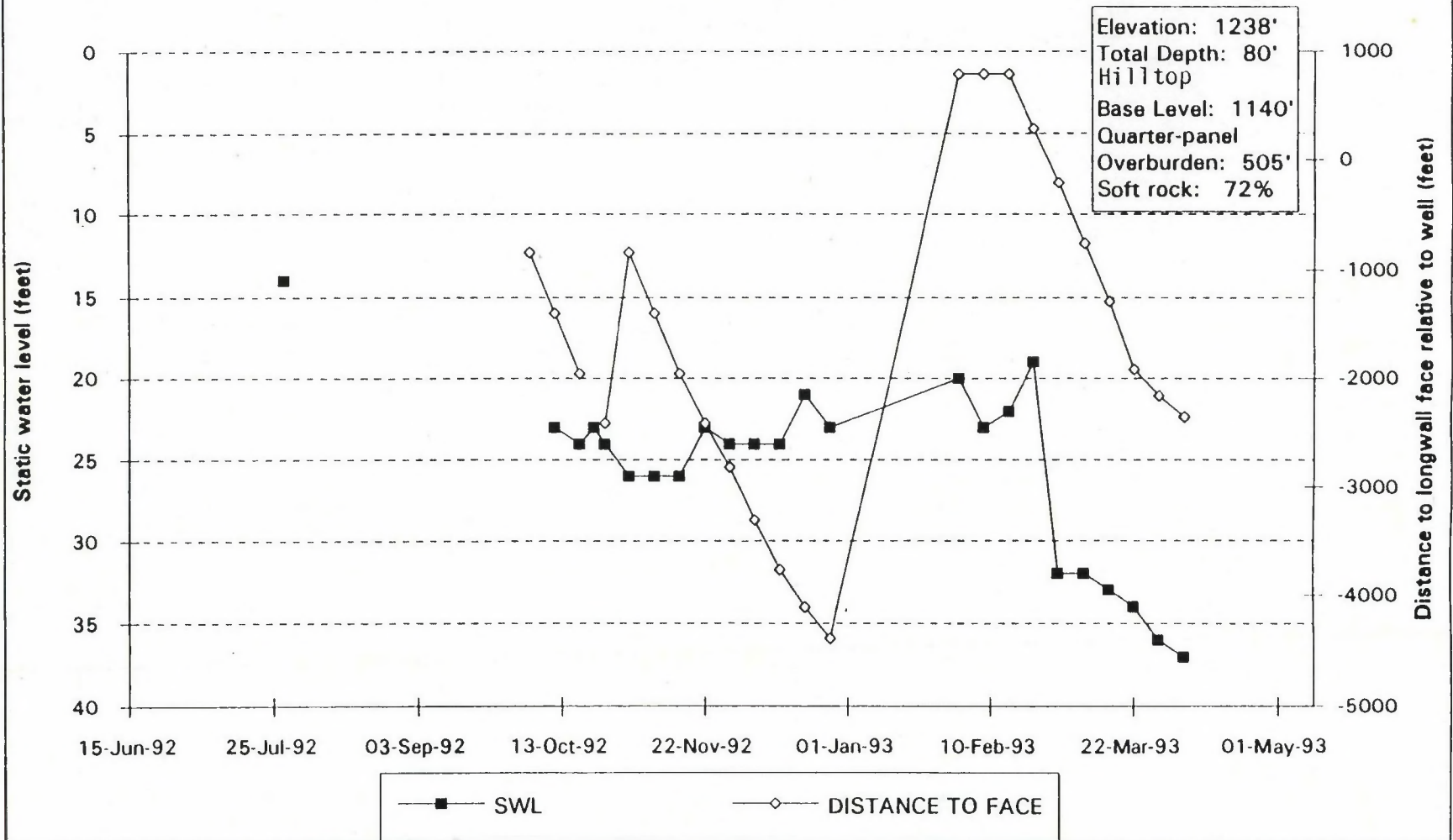
WELL #81 STATIC WATER LEVEL AREA #2



ORIGINAL
D0360-7

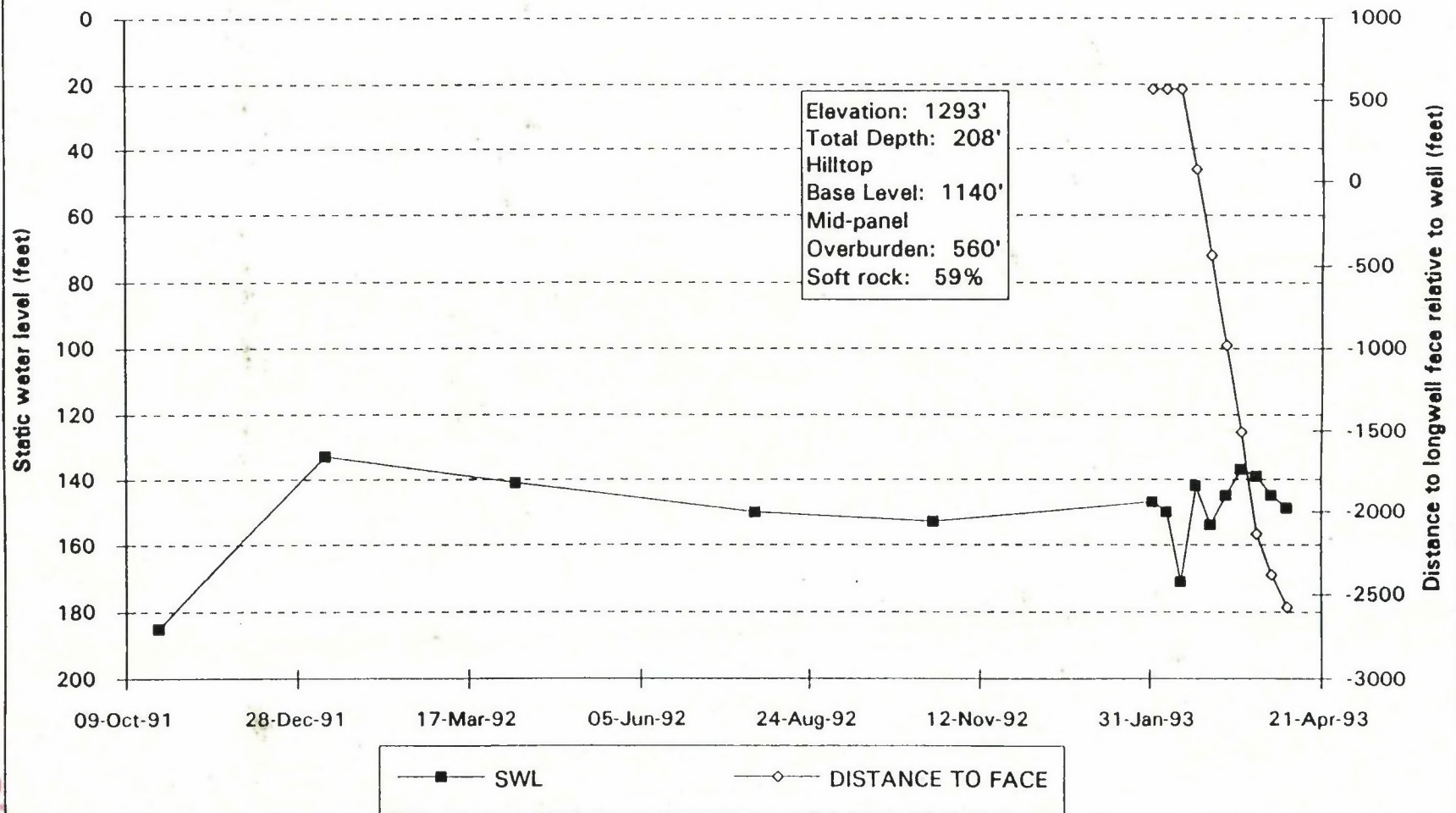
WELL #82 STATIC WATER LEVEL AREA #2

Severe Impact



Minimal Impact

WELL #83 STATIC WATER LEVEL AREA #2

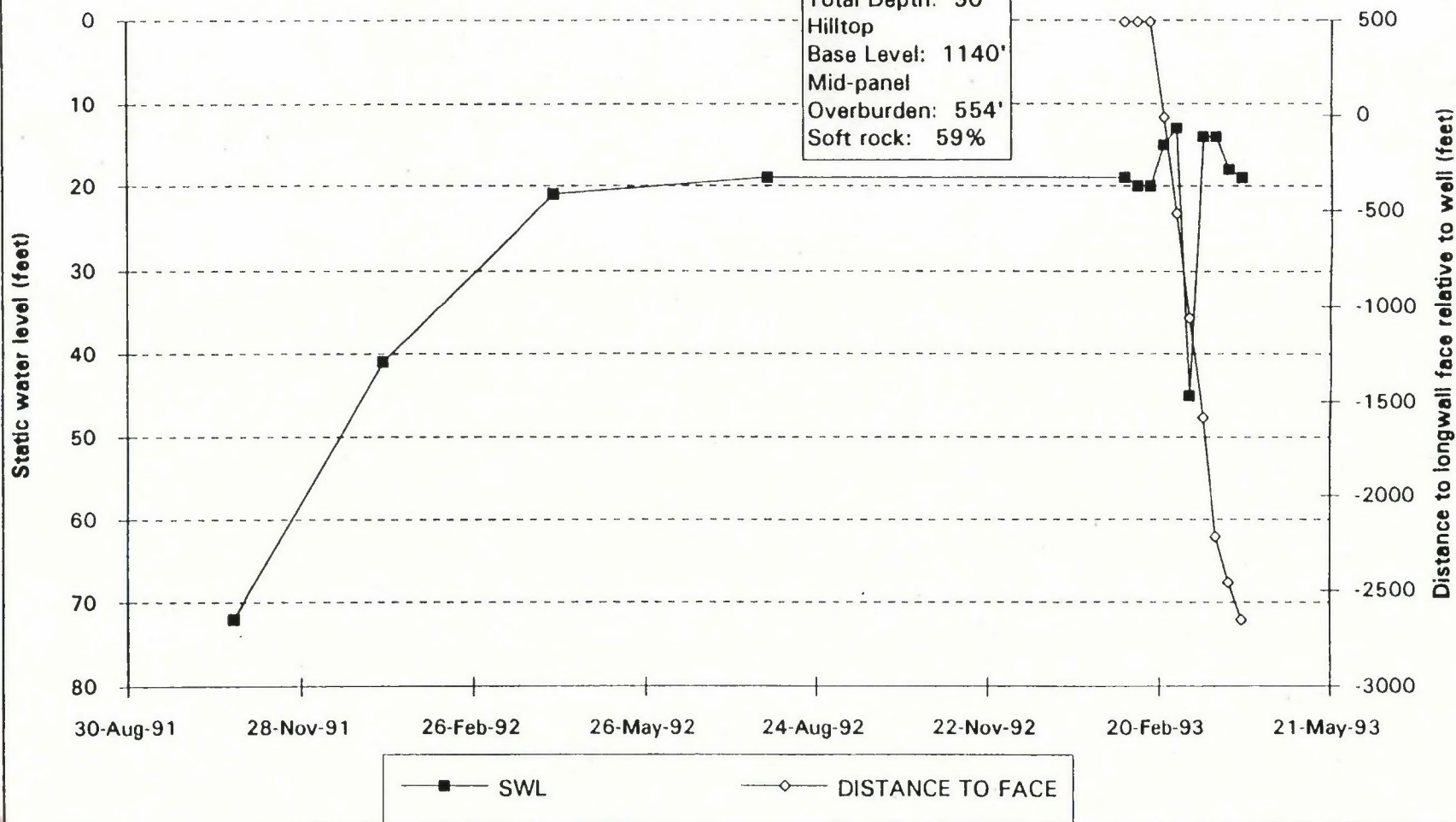


ORIGINAL
D036077

WELL #84 STATIC WATER LEVEL AREA #2

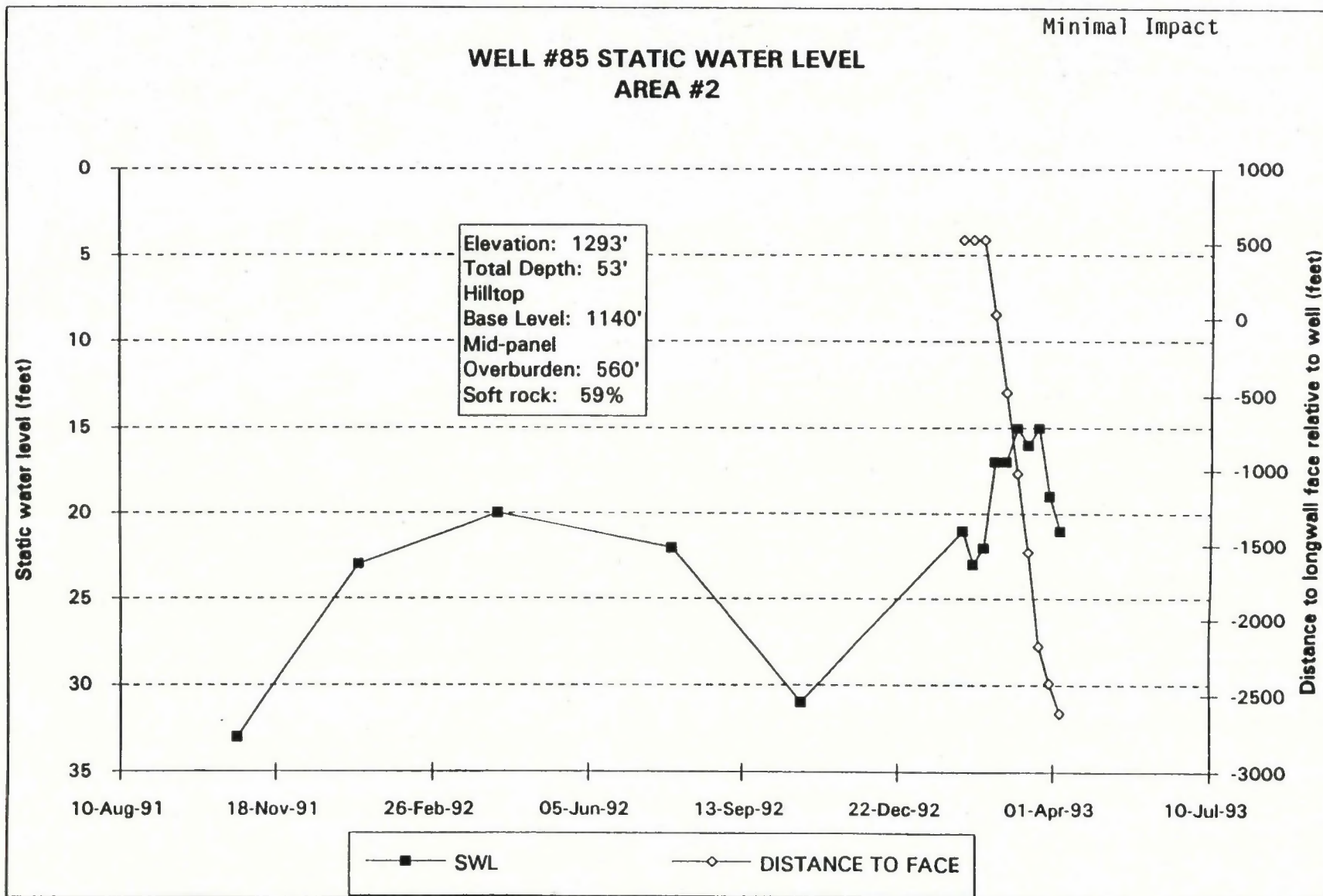
Minimal Impact

Elevation: 1287'
Total Depth: 90'
Hilltop
Base Level: 1140'
Mid-panel
Overburden: 554'
Soft rock: 59%

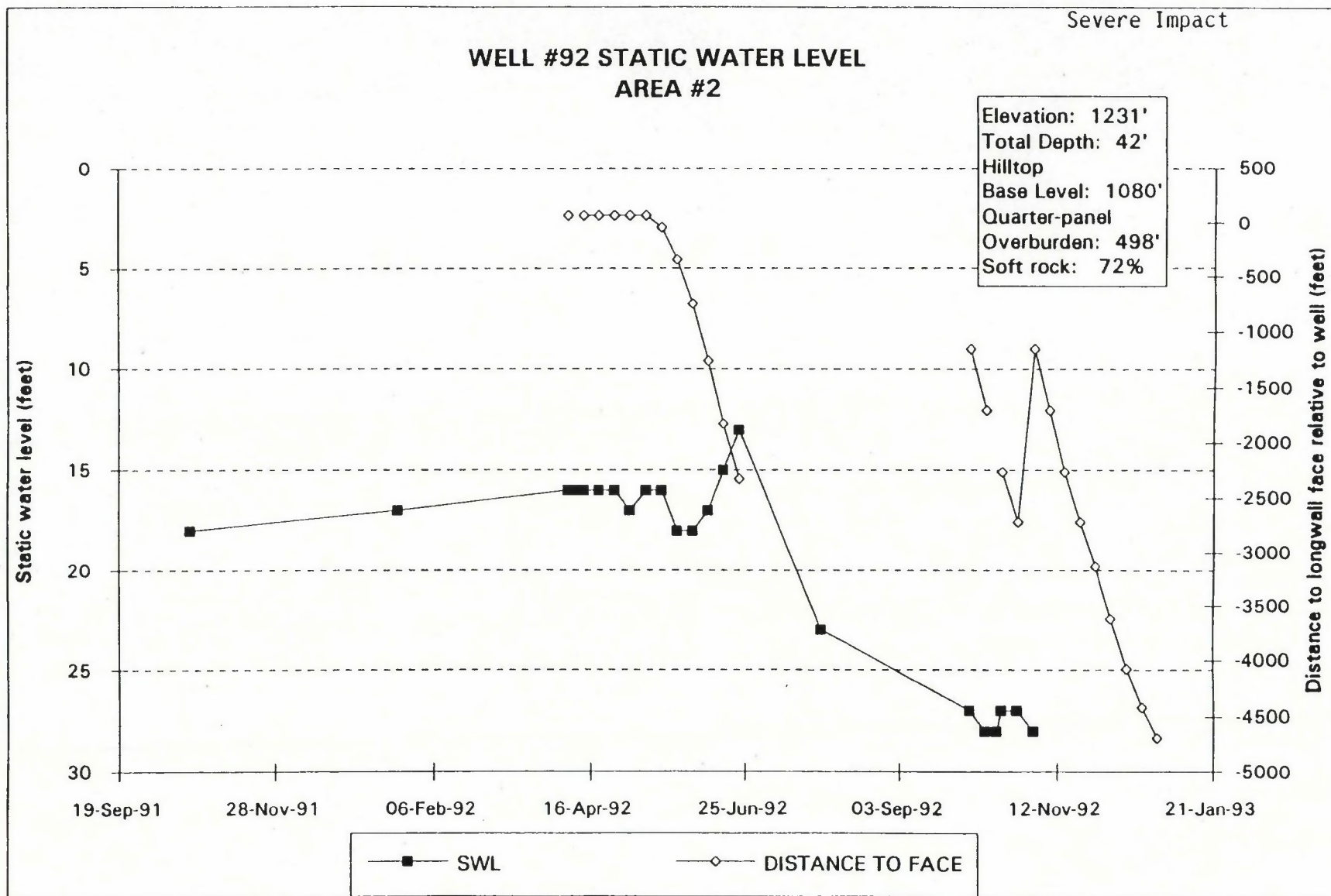


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D0360-7

ORIGINAL
D0360-7

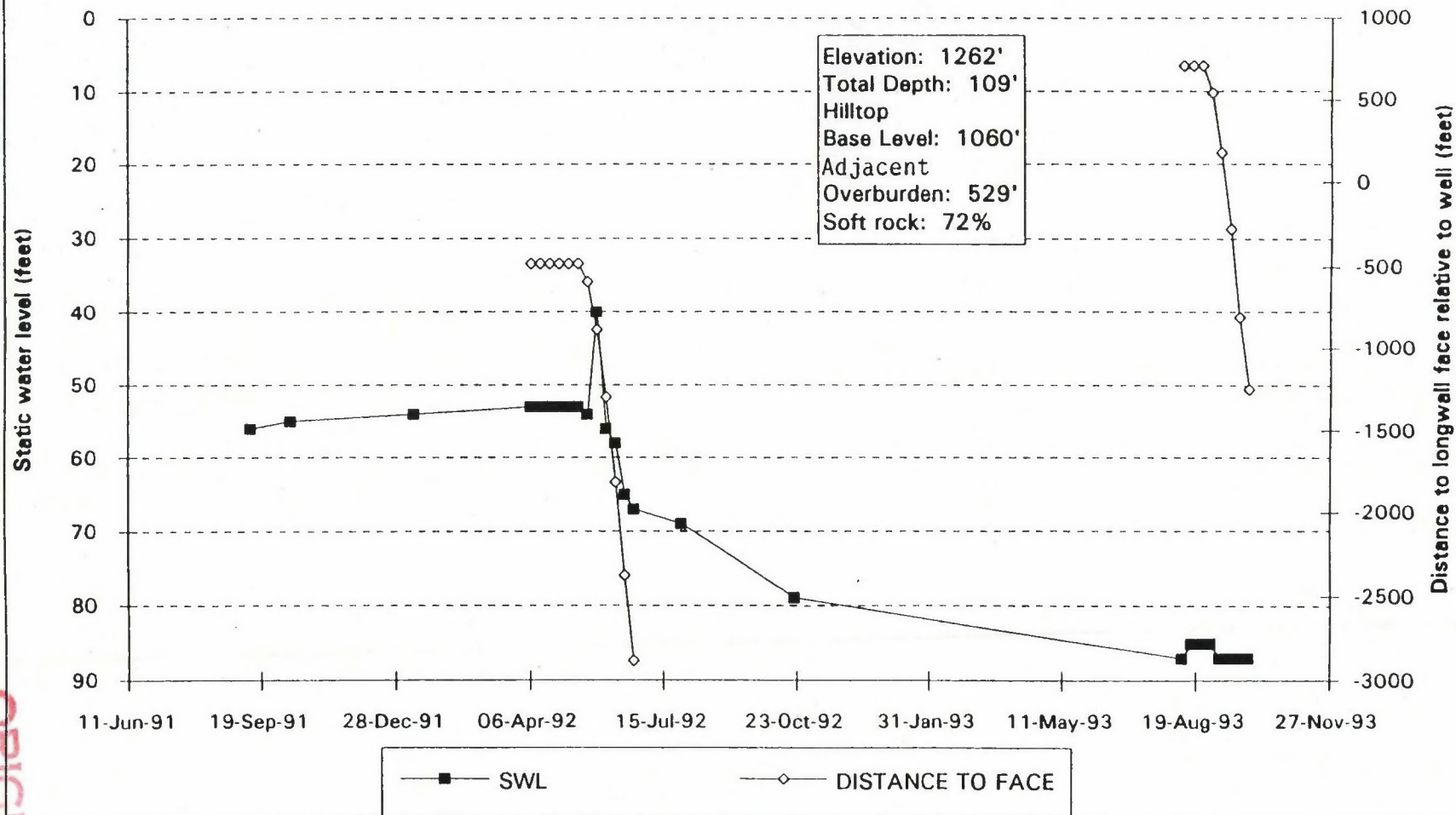


ORIGINAL
D0360-7



Severe Impact

WELL #93 STATIC WATER LEVEL AREA #2



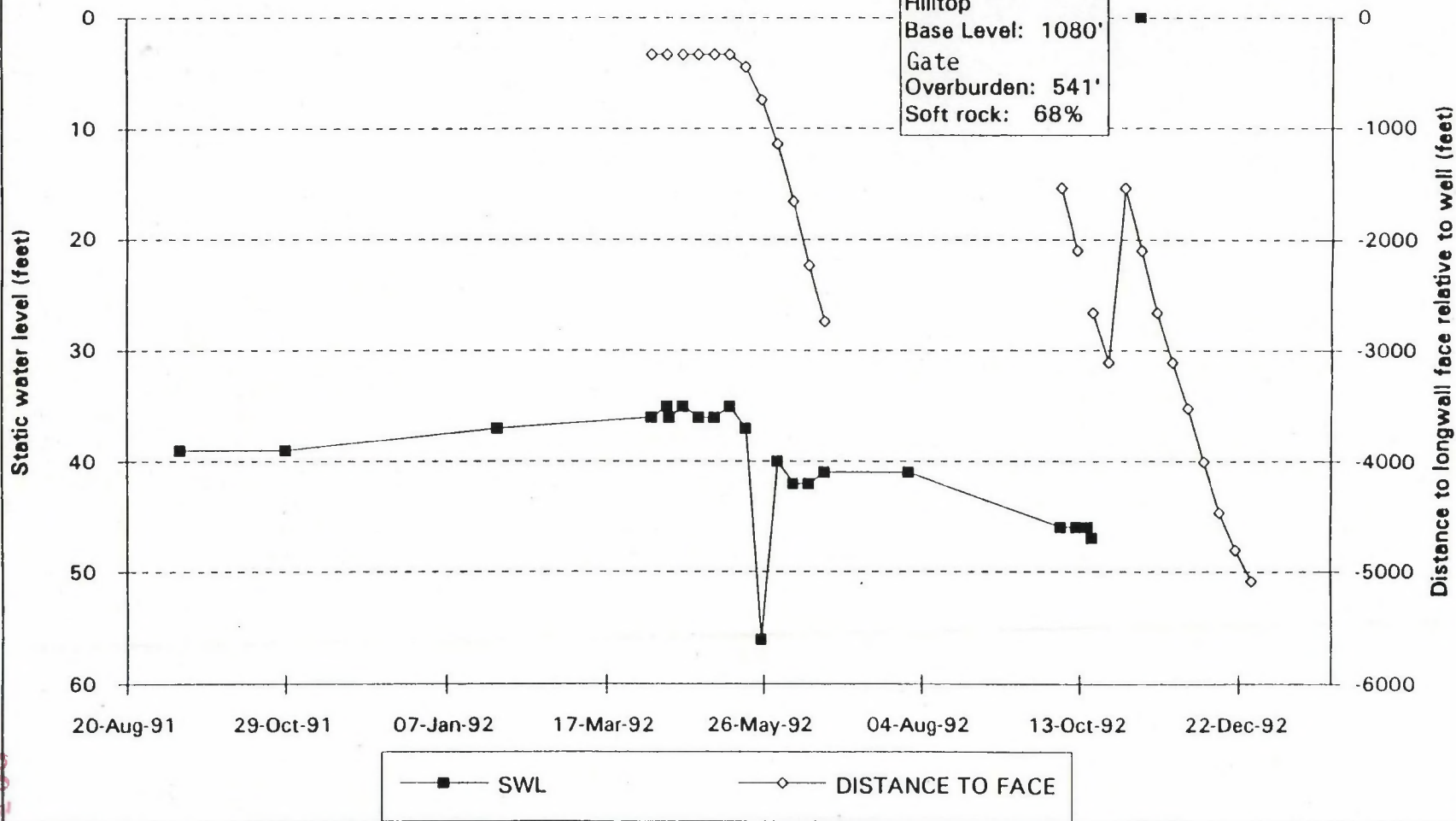
D0360-7

ORIGINAL

WELL #94 STATIC WATER LEVEL AREA #2

Moderate Impact

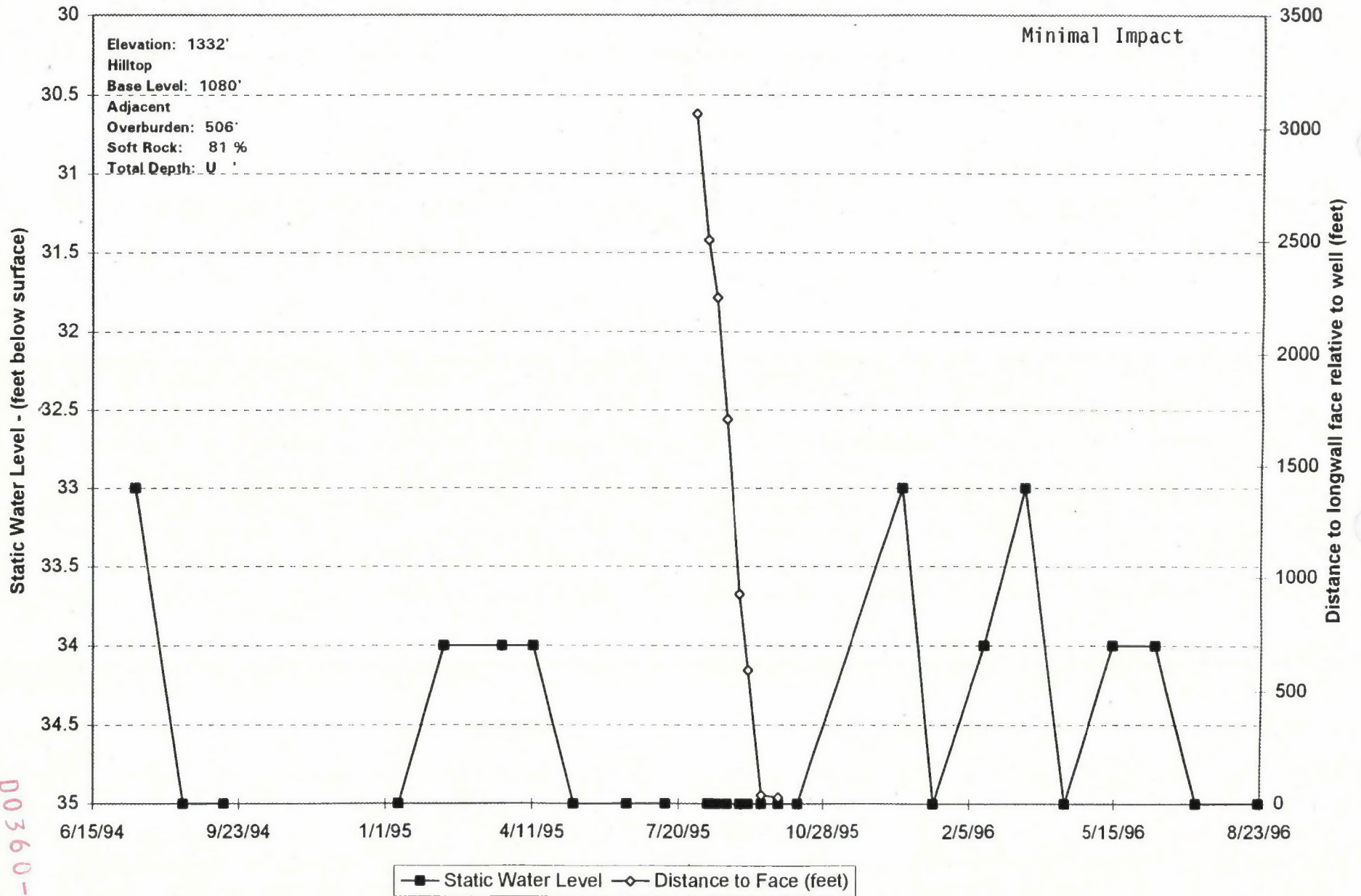
Elevation: 1274'
Total Depth: 69'
Hilltop
Base Level: 1080'
Gate
Overburden: 541'
Soft rock: 68%



ORIGINAL

DO-560-7

Well #106

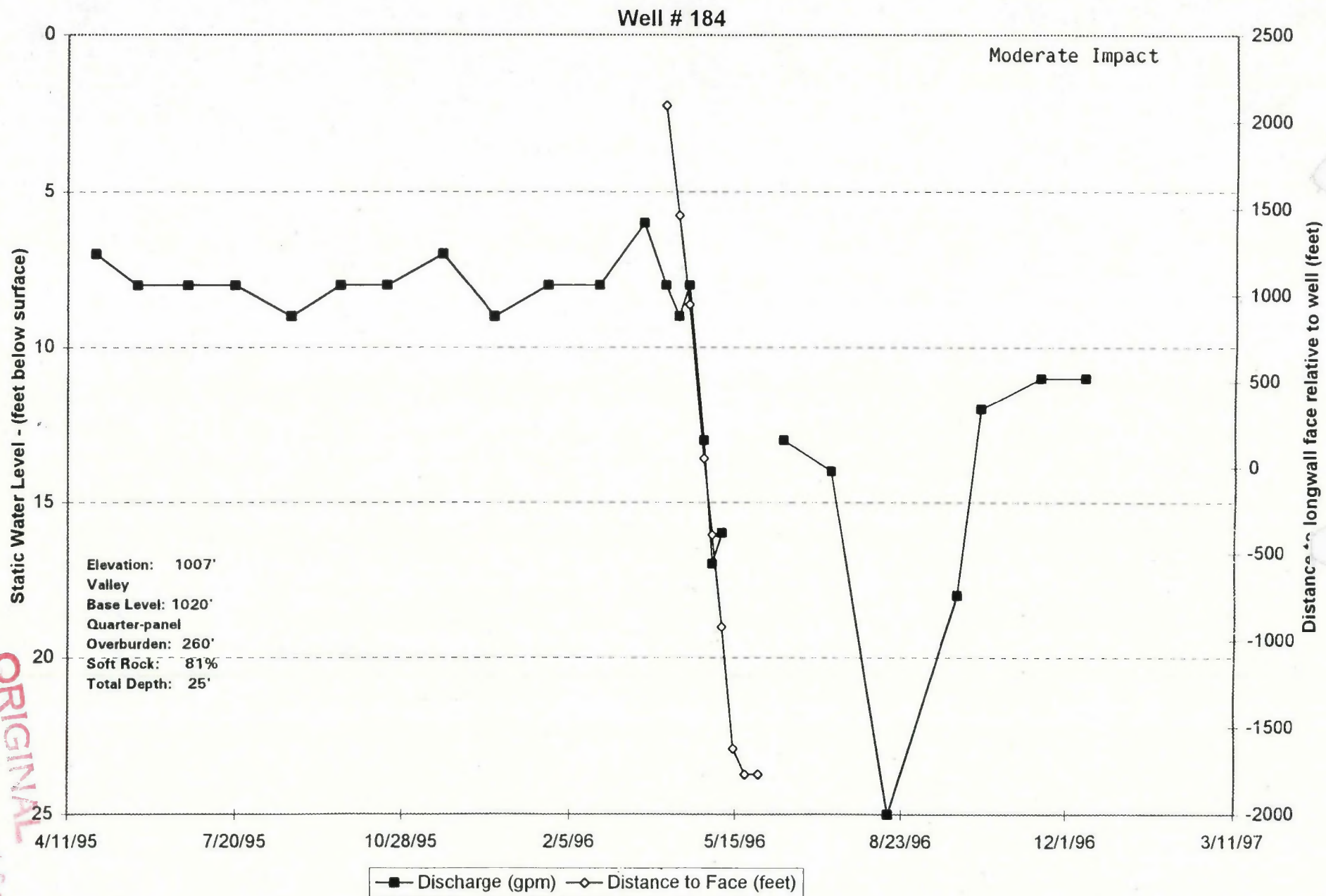


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TOVCC 21514

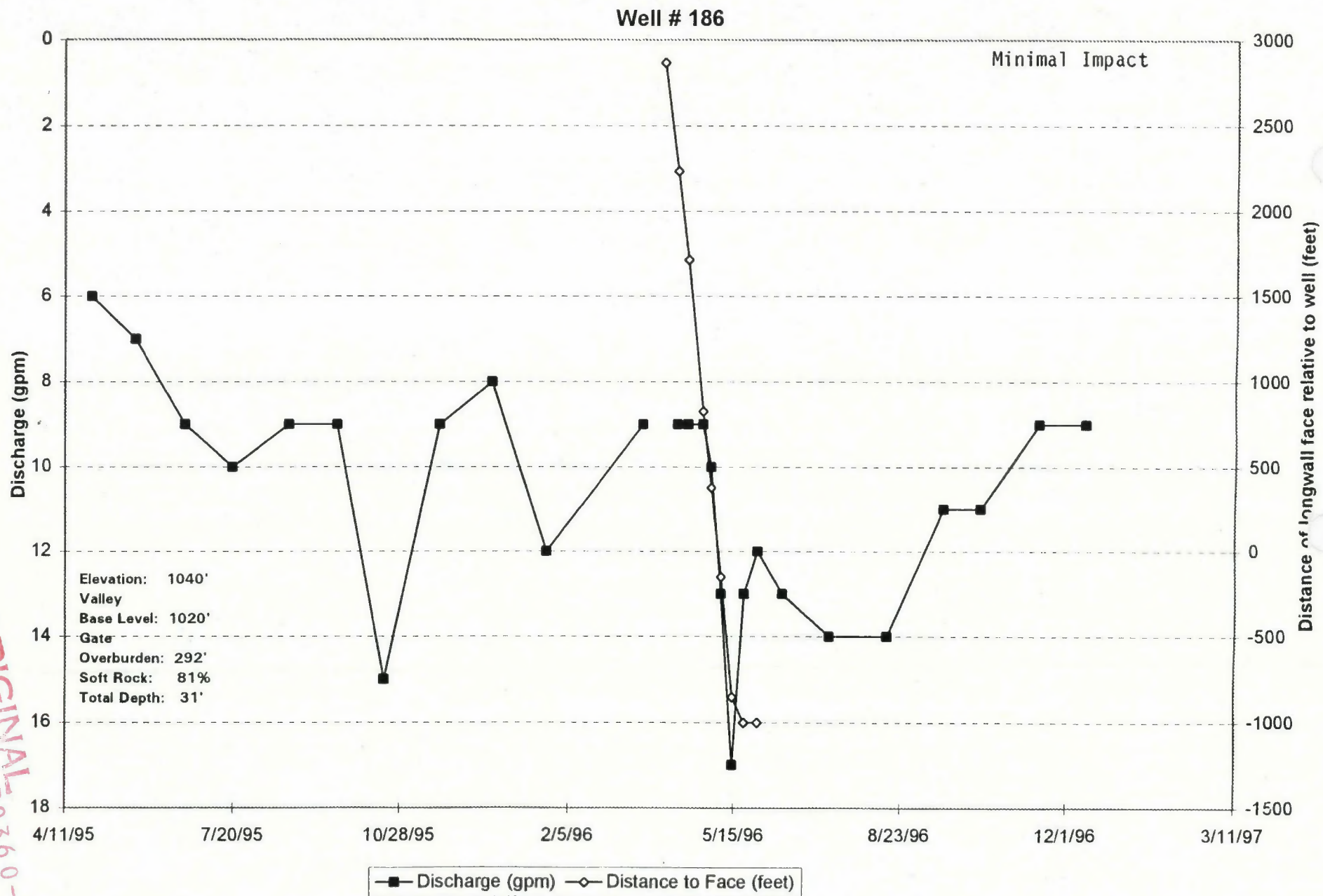
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ORIGINAL
D0360-7



Prepared by: Moody and Assoc., Inc. 4/13/97

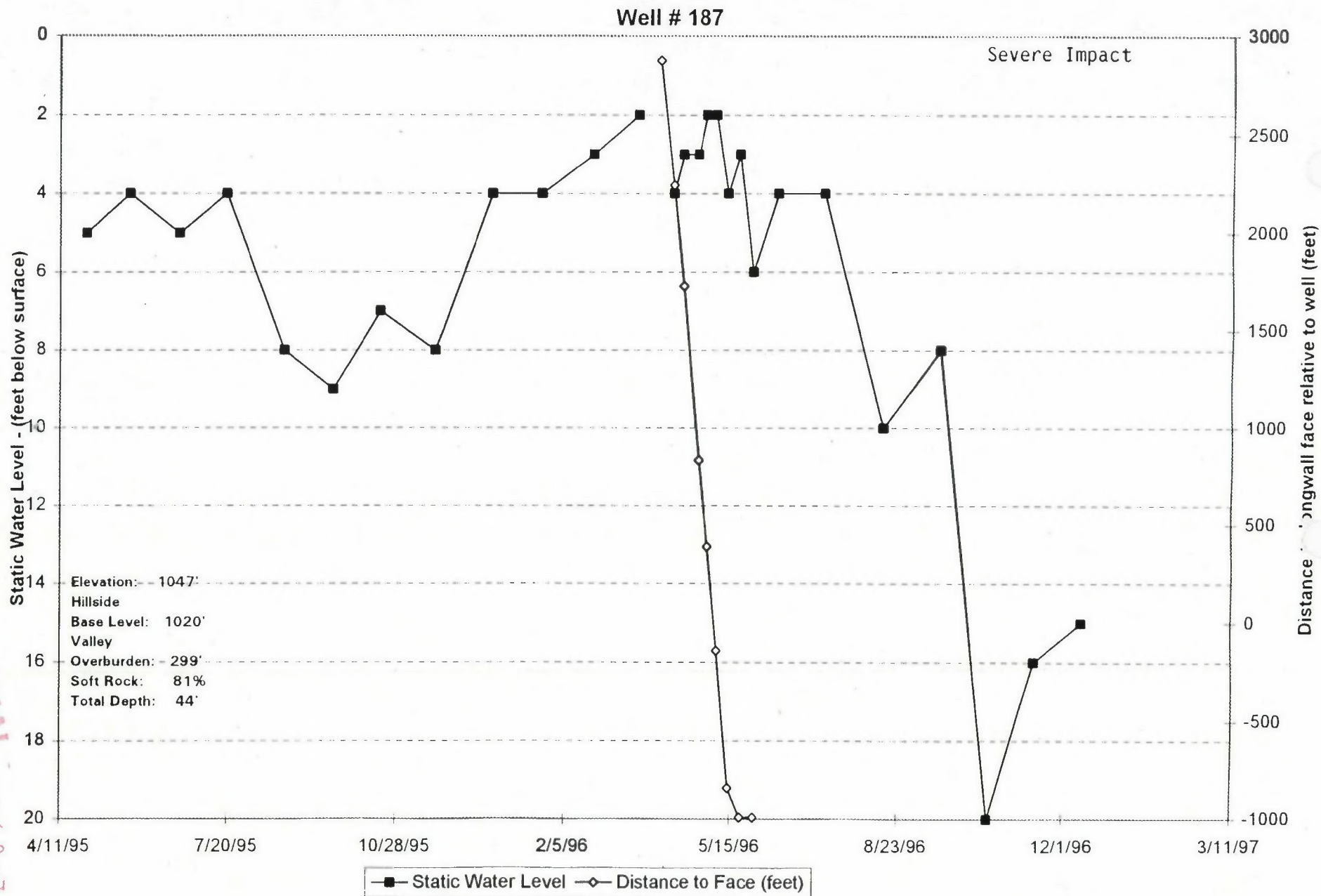
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Prepared by: Moody and Assoc., Inc. 4/13/97

TOVCC 21516

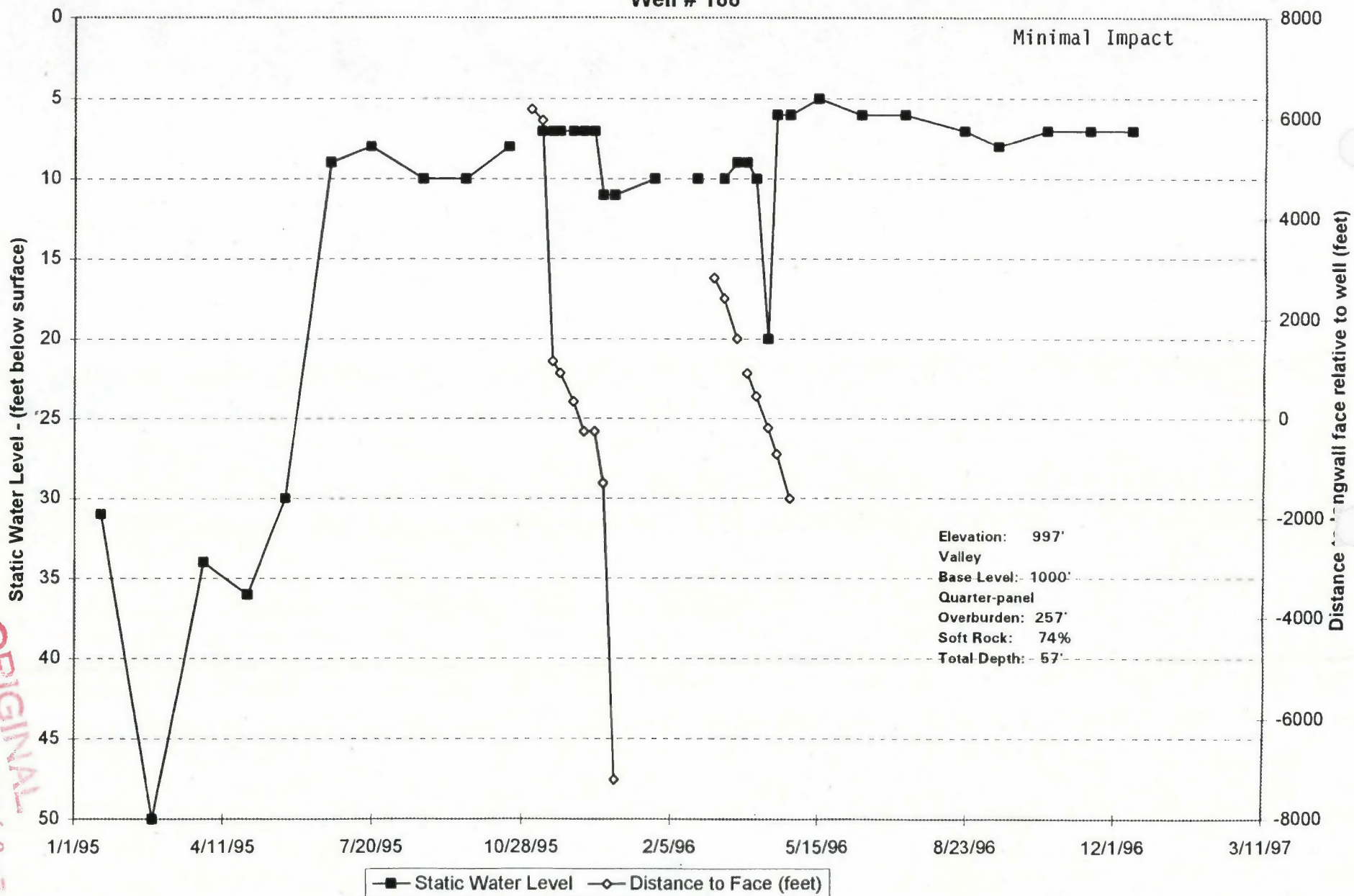
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Prepared by: Moody and Assoc., Inc., 4/13/97

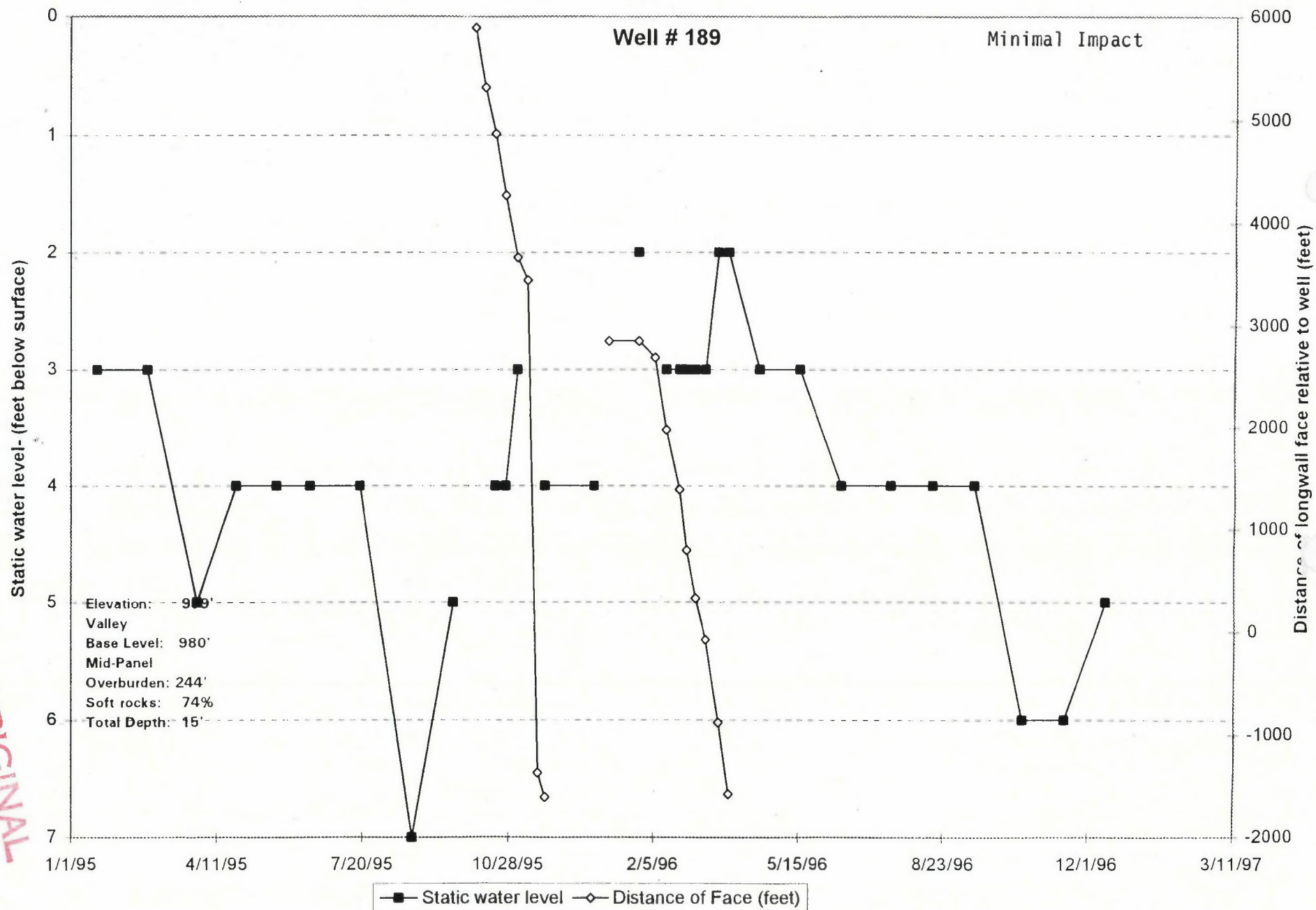
TOVCC 21517

Well # 188



Prepared by: Moody and Assoc., Inc. 4/13/97

TOVCC 21518

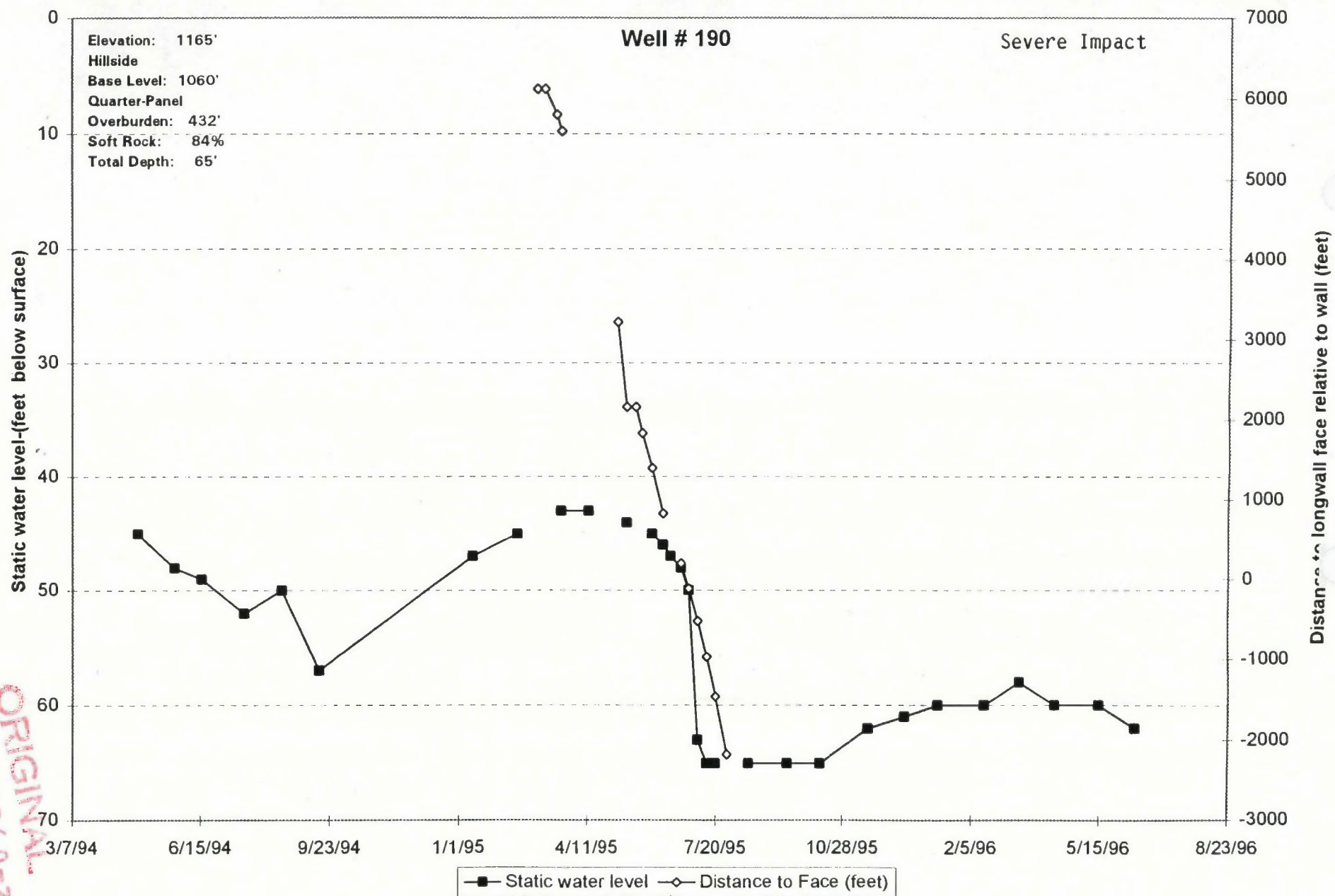


Prepared by: Moody and Assoc., Inc. 4/13/97

TOVCC 21519

ORIGINAL
D0360-7

ORIGINAL
0360-2



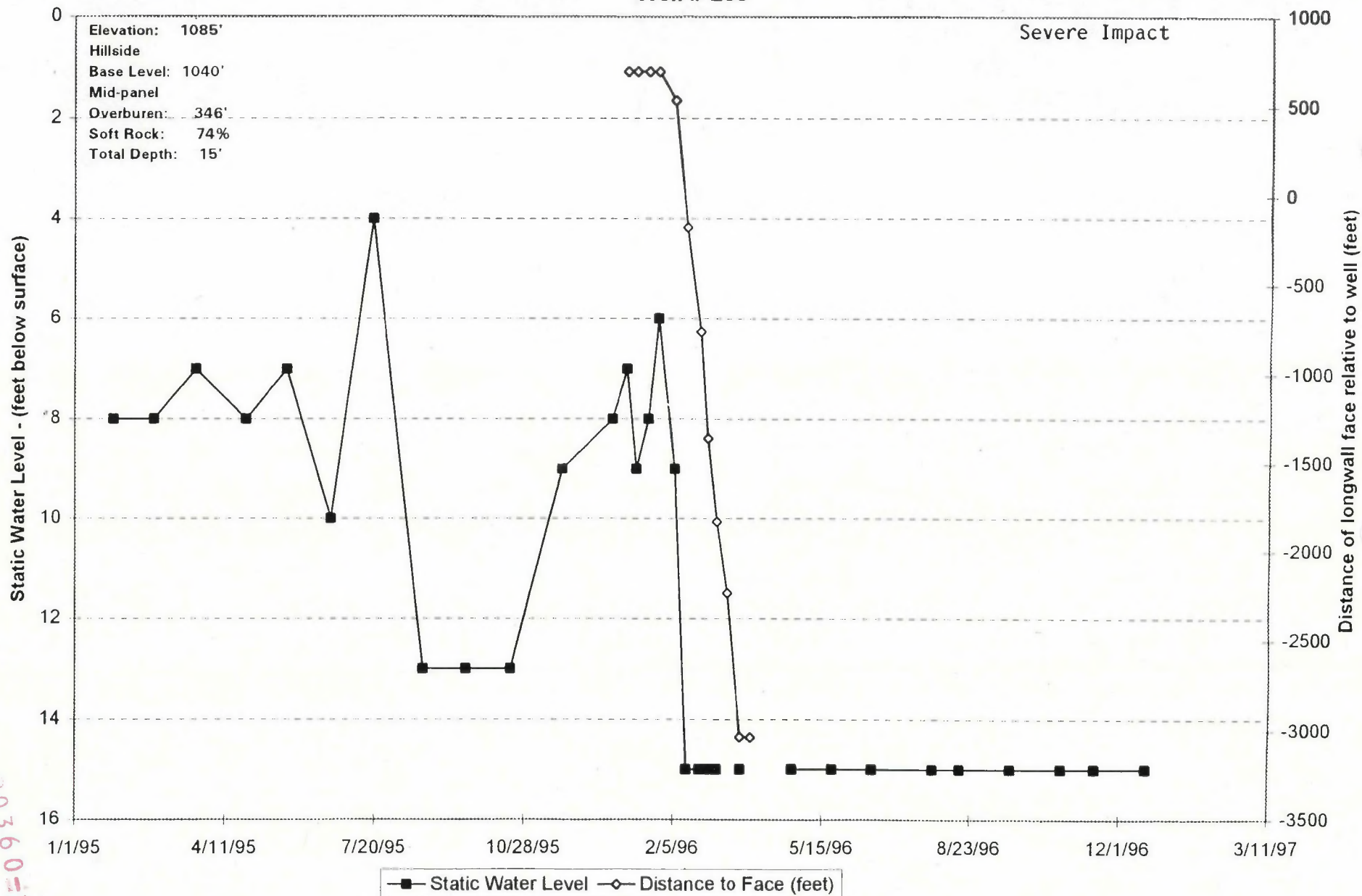
Prepared by: Moody and Assoc., Inc. 4/13/97

TOVCC 21520

Well # 208

Elevation: 1085'
 Hillside
 Base Level: 1040'
 Mid-panel
 Overburen: 346'
 Soft Rock: 74%
 Total Depth: 15'

Severe Impact

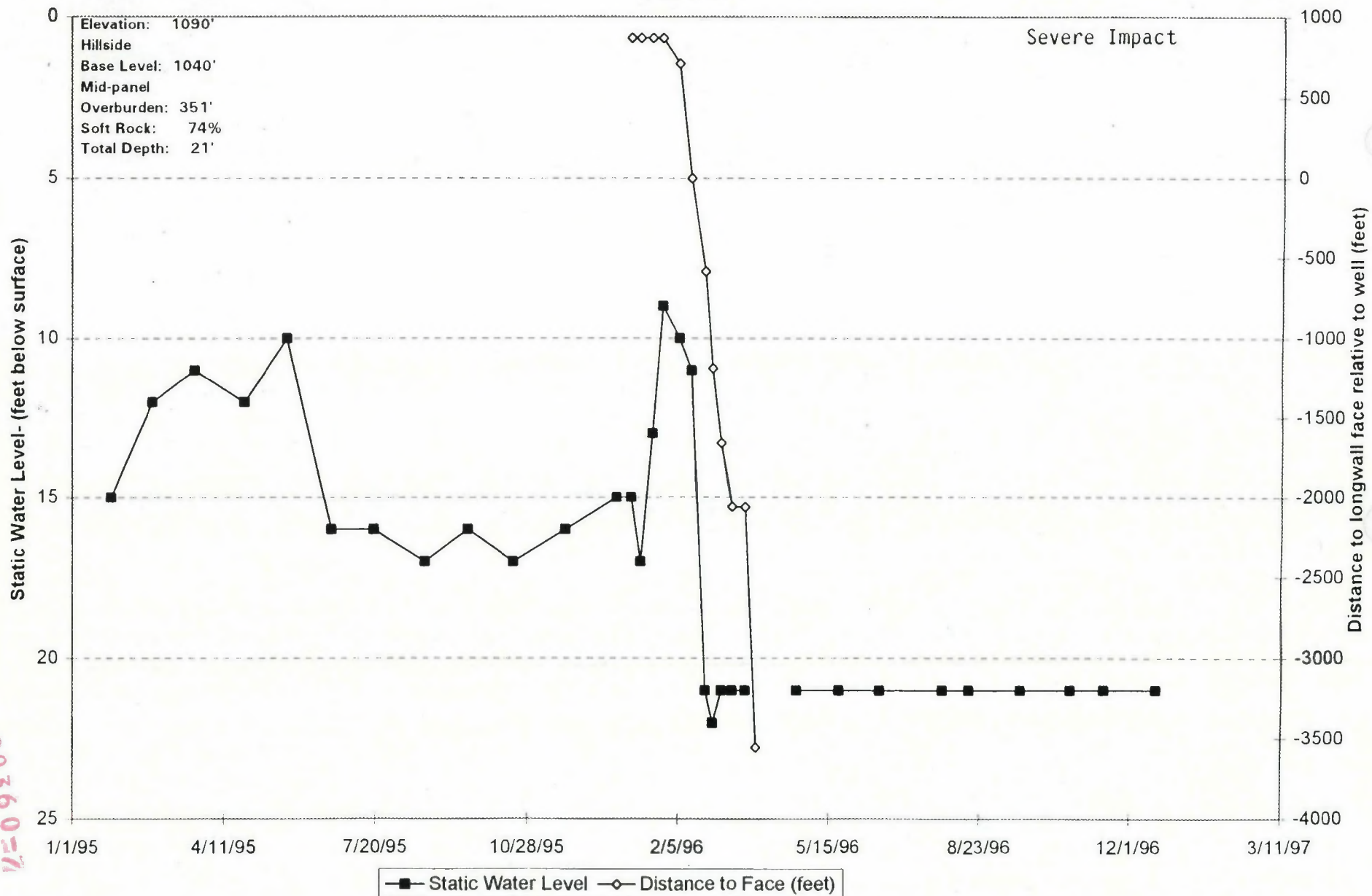


Prepared by: Moody and Assoc., Inc. 4/13/97

TOVCC 21521

ORIGINAL 0360-7

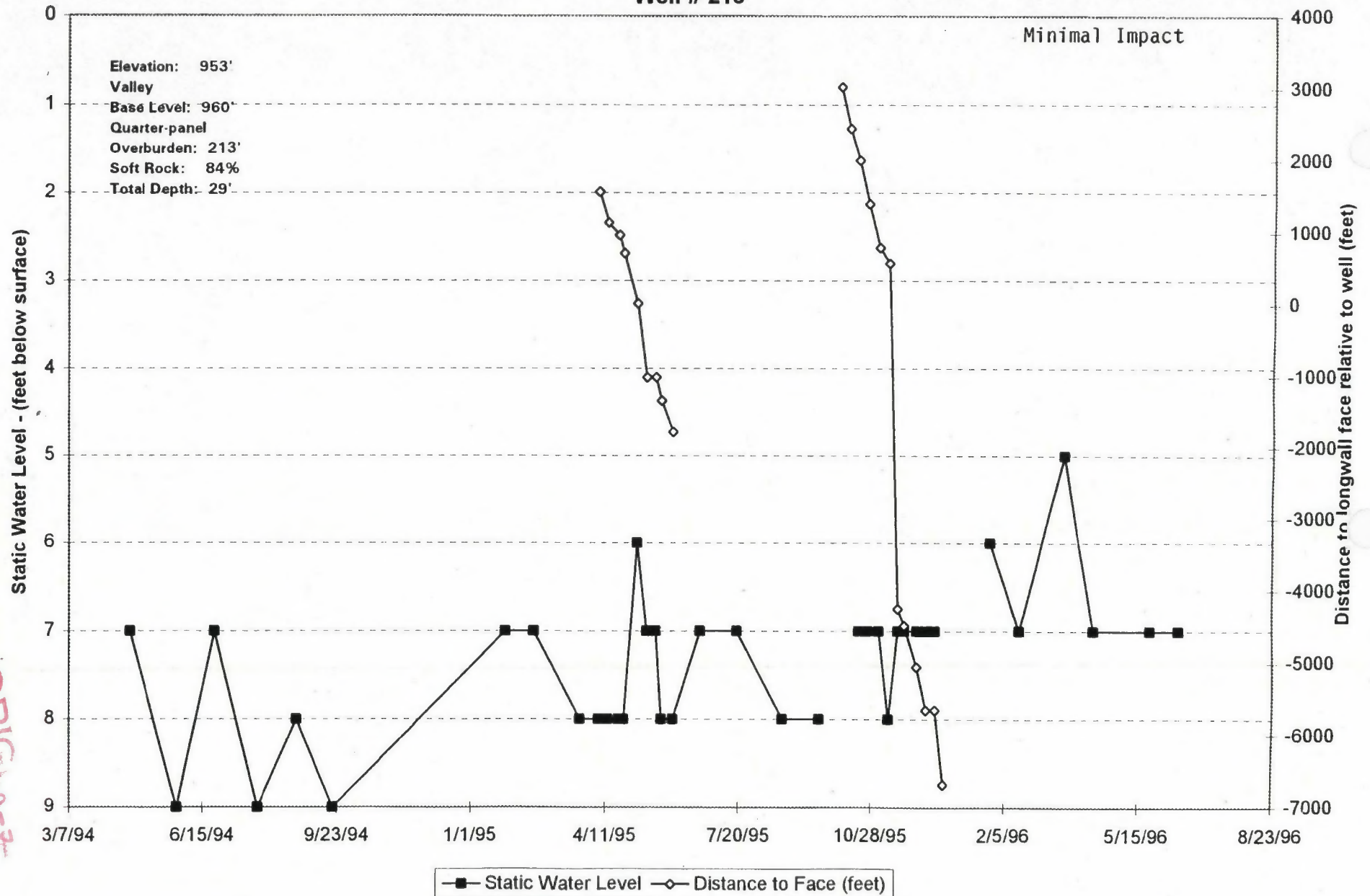
Well # 209



Prepared by: Moody and Assoc., Inc. 4/13/97

TOVCC 21522

Well # 213



Prepared by: Moody and Assoc., Inc. 4/13/97

TOVCC 21523

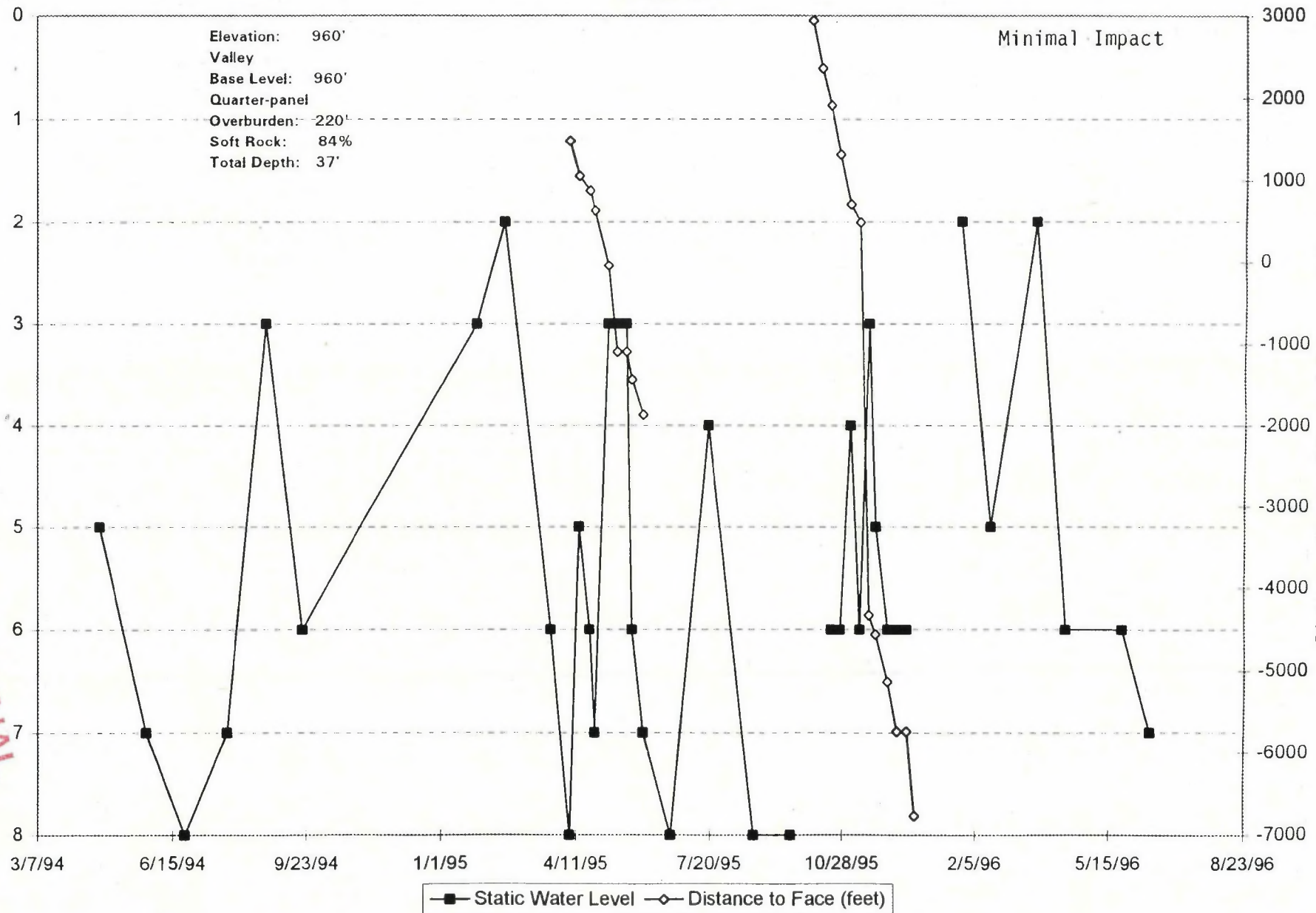
Well # 214

Elevation: 960'
Valley
Base Level: 960'
Quarter-panel
Overburden: 220'
Soft Rock: 84%
Total Depth: 37'

Minimal Impact

Static Water Level- (feet below surface)

Distance of longwall face relative to well (feet)



Prepared by: Moody and Assoc., Inc. 4/13/97

TOVCC 21524

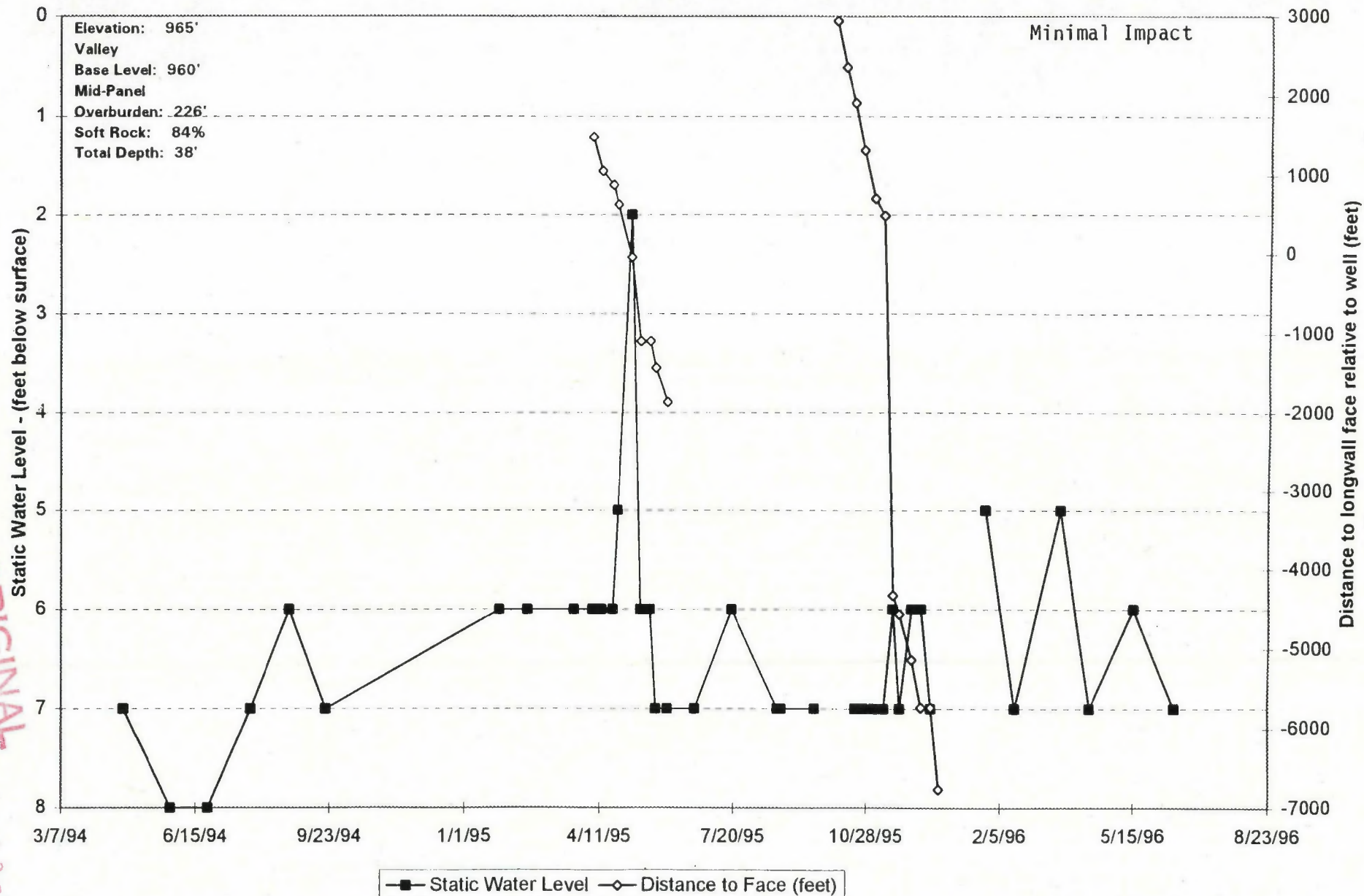
ORIGINAL

00360-7

Well # 215

Elevation: 965'
Valley
Base Level: 960'
Mid-Panel
Overburden: 226'
Soft Rock: 84%
Total Depth: 38'

Minimal Impact



Prepared by: Moody and Assoc., Inc. 4/13/97

TOVCC 21525

ORIGINAL

D0360-7

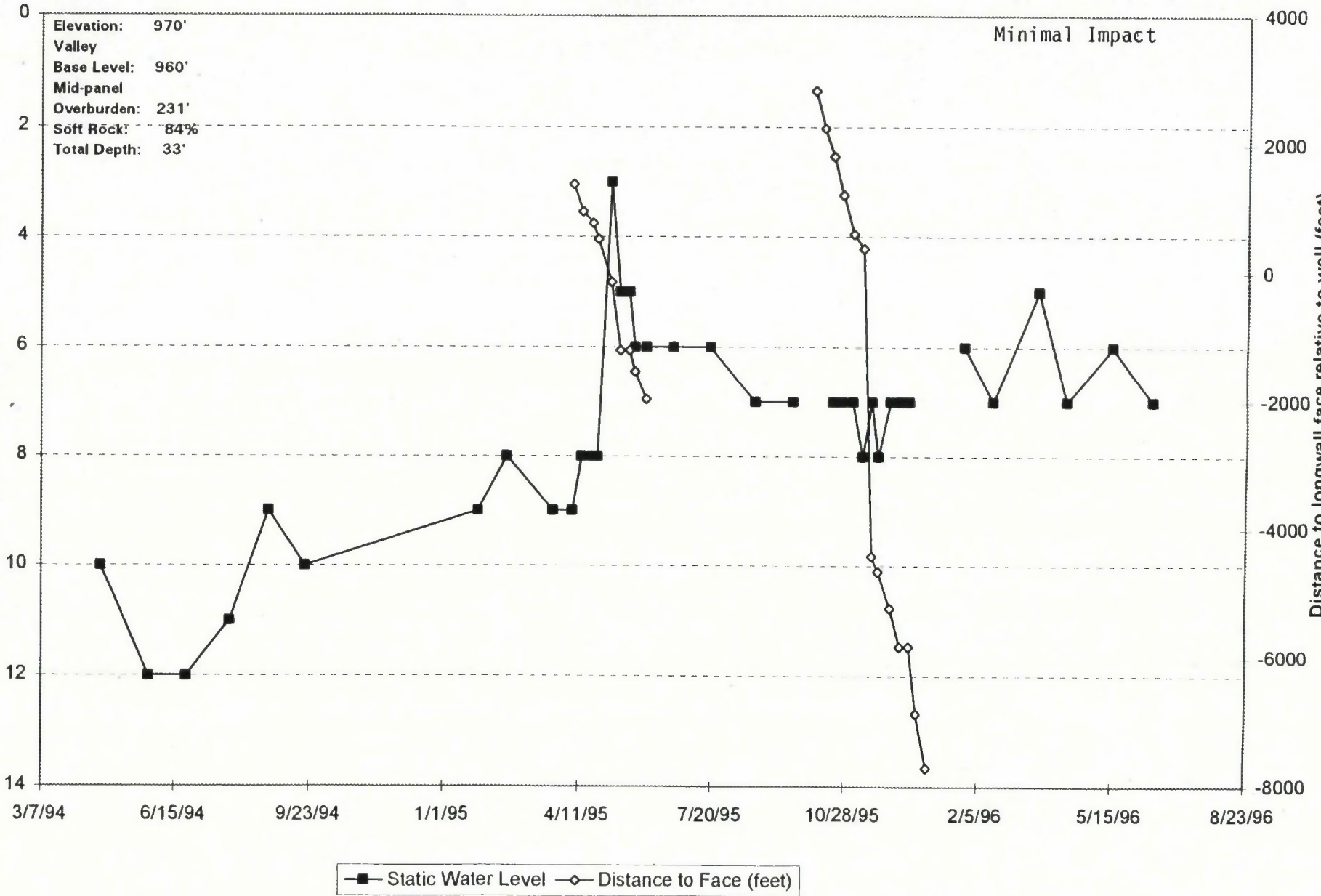
Well # 216

Elevation: 970'
Valley
Base Level: 960'
Mid-panel
Overburden: 231'
Soft Rock: 84%
Total Depth: 33'

Minimal Impact

Static Water Level - (feet below surface)

Distance to longwall face relative to well (feet)



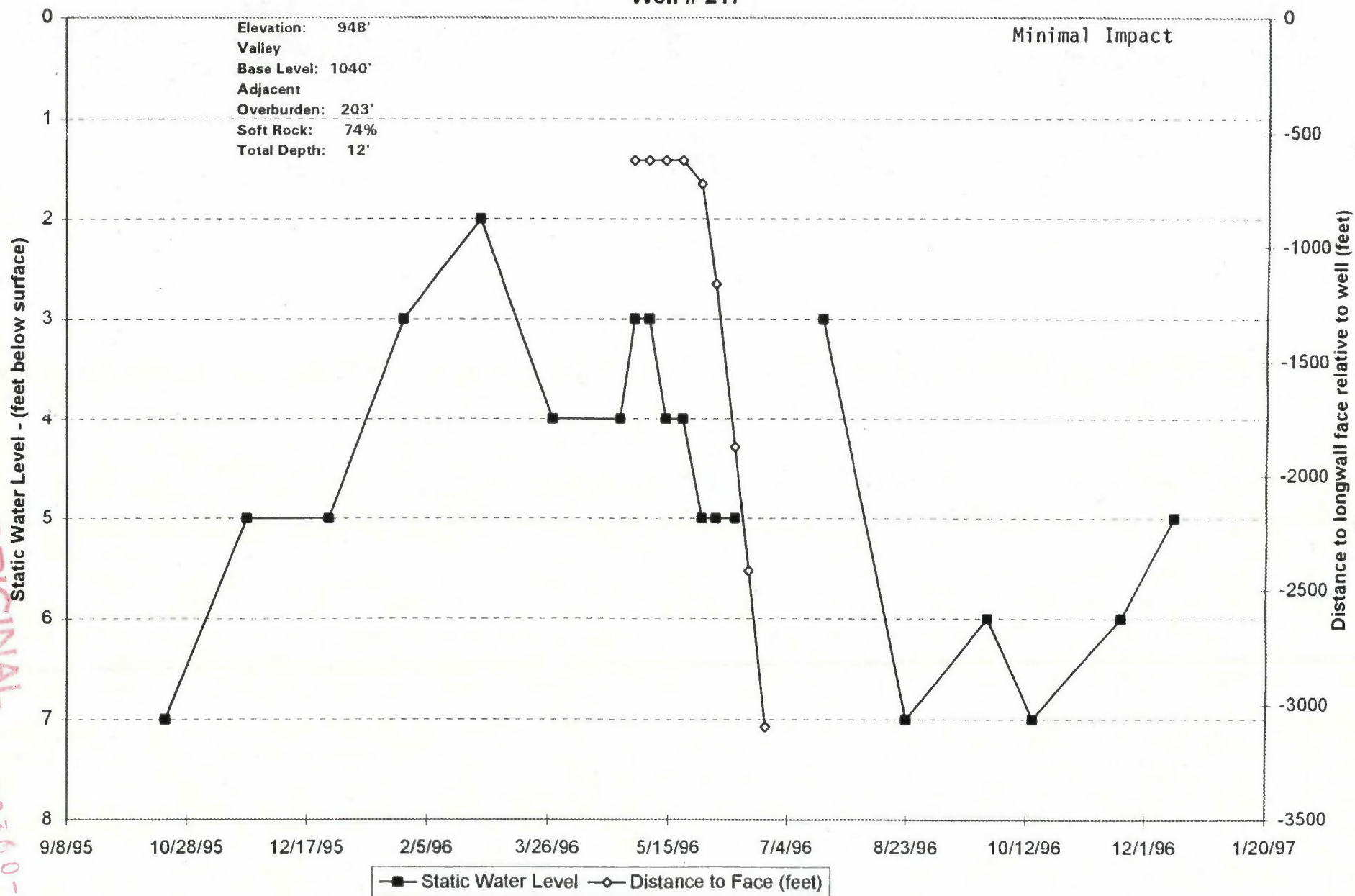
Prepared by: Moody and Assoc., Inc. 4/13/97

TOVCC 21526

ORIGINAL
00360-7

Minimal Impact

Elevation:	948'
Valley	
Base Level:	1040'
Adjacent	
Overburden:	203'
Soft Rock:	74%
Total Depth:	12'



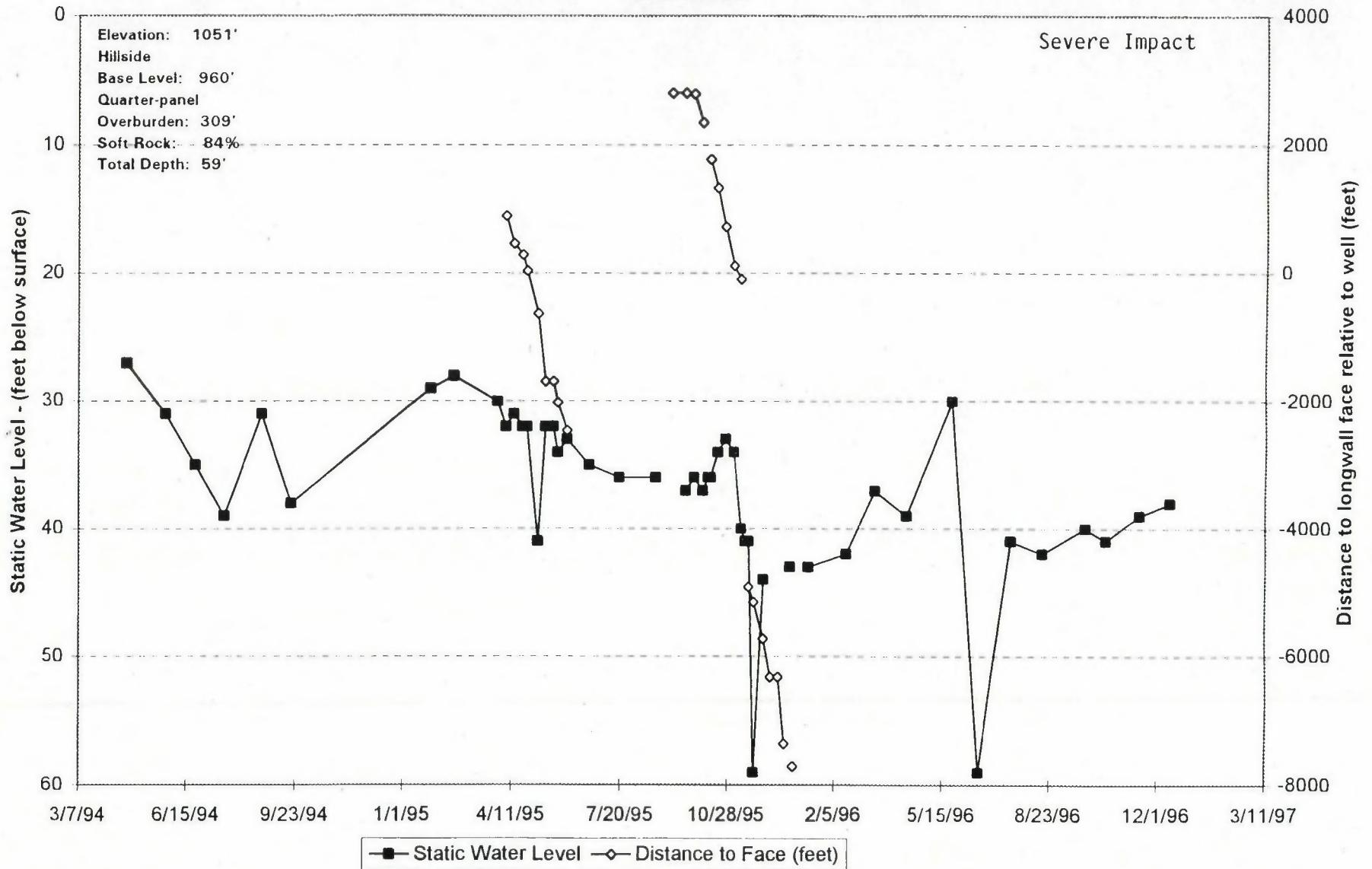
Prepared by: Moody and Assoc., Inc. 4/13/97

TOVCC 21527

Well # 260

Elevation: 1051'
 Hillside
 Base Level: 960'
 Quarter-panel
 Overburden: 309'
 Soft Rock: 84%
 Total Depth: 59'

Severe Impact



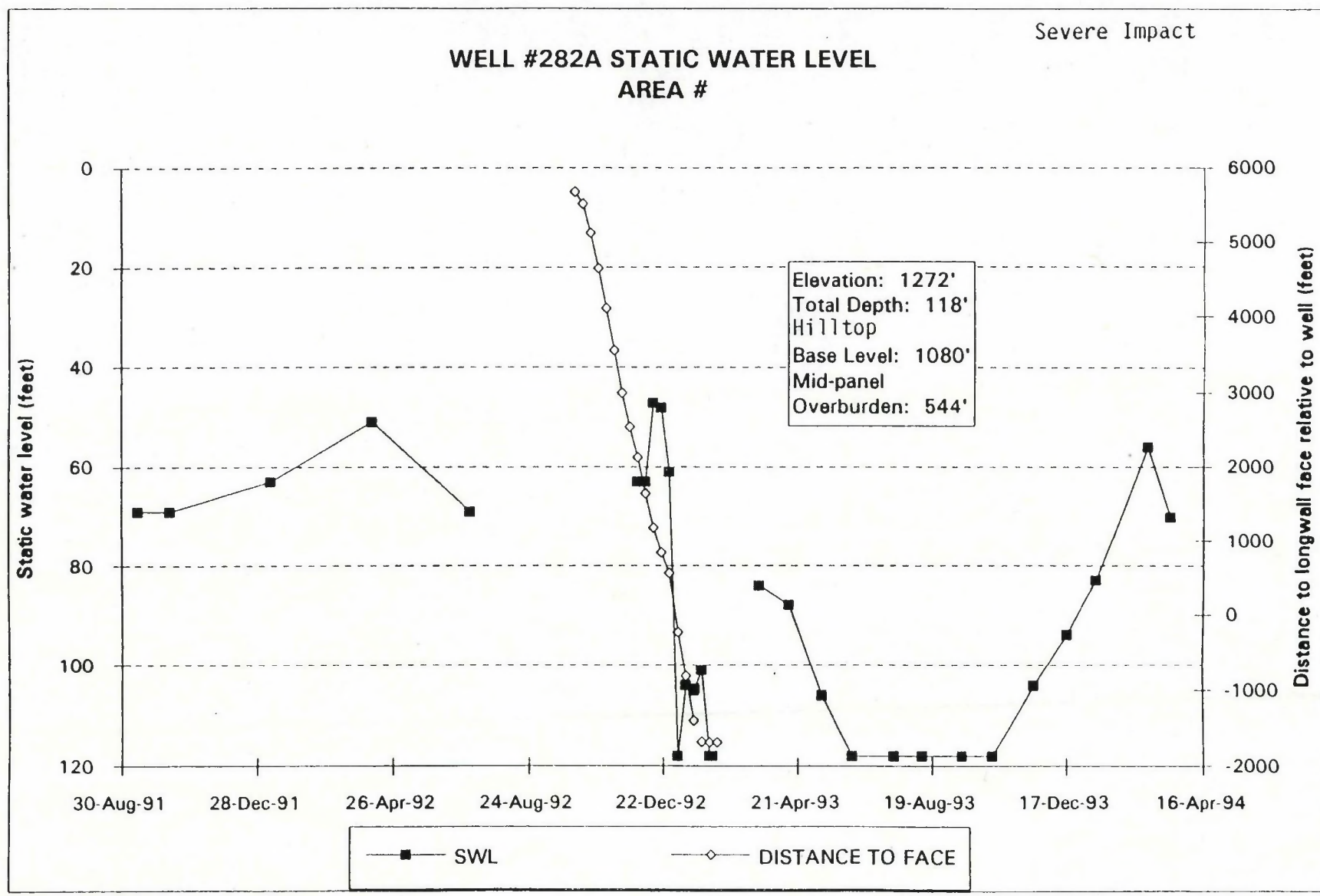
Prepared by: Moody and Assoc., Inc. 4/13/97

TOVCC 21528

ORIGINAL

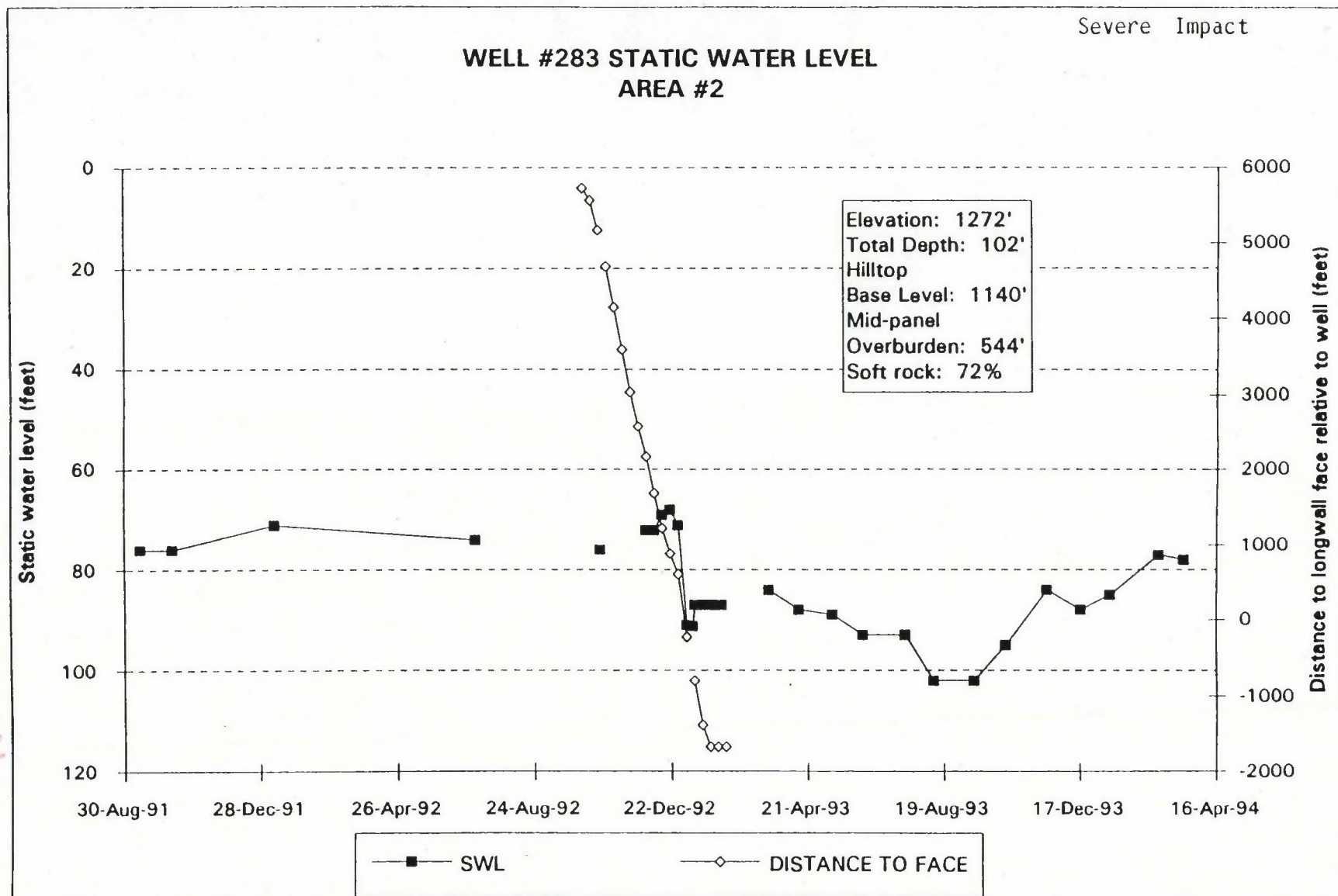
00360-7

ORIGINAL
D0360-7



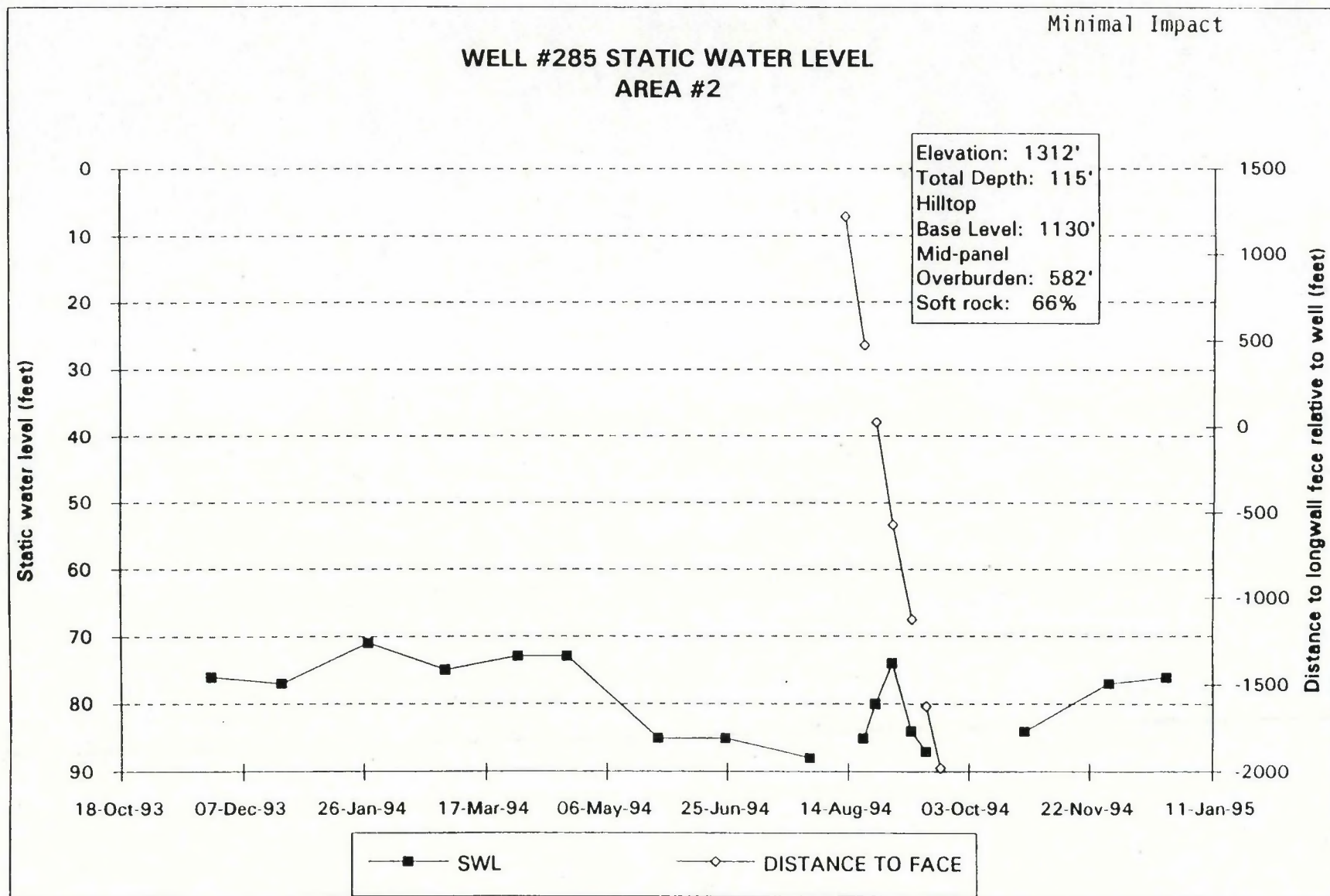
ORIGINAL

DO360-7



ORIGINAL

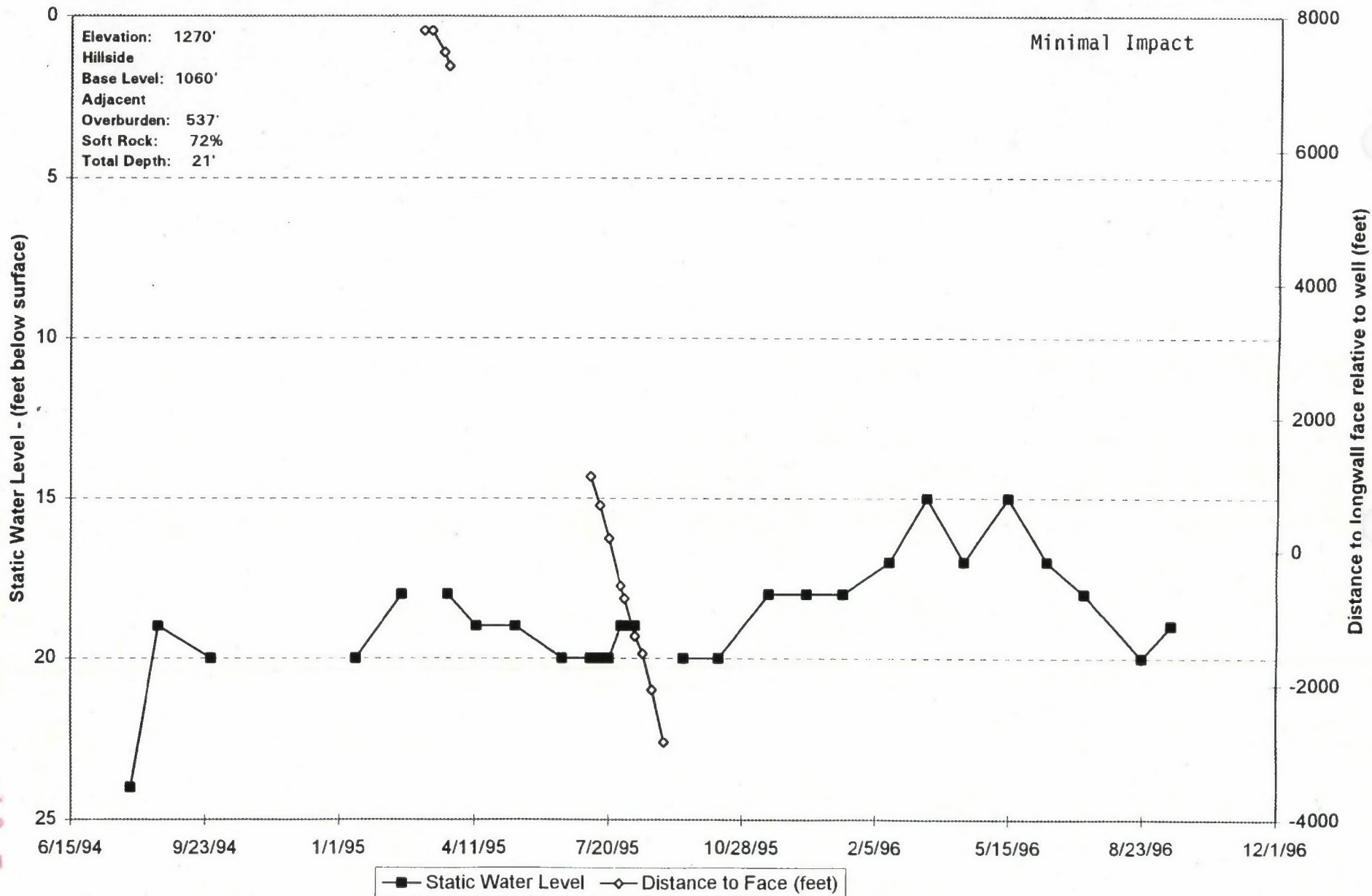
00360-7



Well # 288

Elevation: 1270'
 Hillside
 Base Level: 1060'
 Adjacent
 Overburden: 537'
 Soft Rock: 72%
 Total Depth: 21'

Minimal Impact



Prepared by: Moody and Assoc., Inc. 4/13/97

TOVCC 21532

APPENDIX B

Spring Discharge Graphs - Application Areas D-0360-2 and D-0360-3

ORIGINAL

D0360-7

APPENDIX B

Spring Hydrographs – Application Areas D-0360-2 and D-0360-2

Changes To Observed Impacts Between D-6360-6 and D-0360-7 PHCs

Supply	D-0360-6 Impacts	D-0360-7 Impacts
DS-89	Moderate	Severe
DS-198	Moderate	Severe
DS-199	Moderate	Minimal

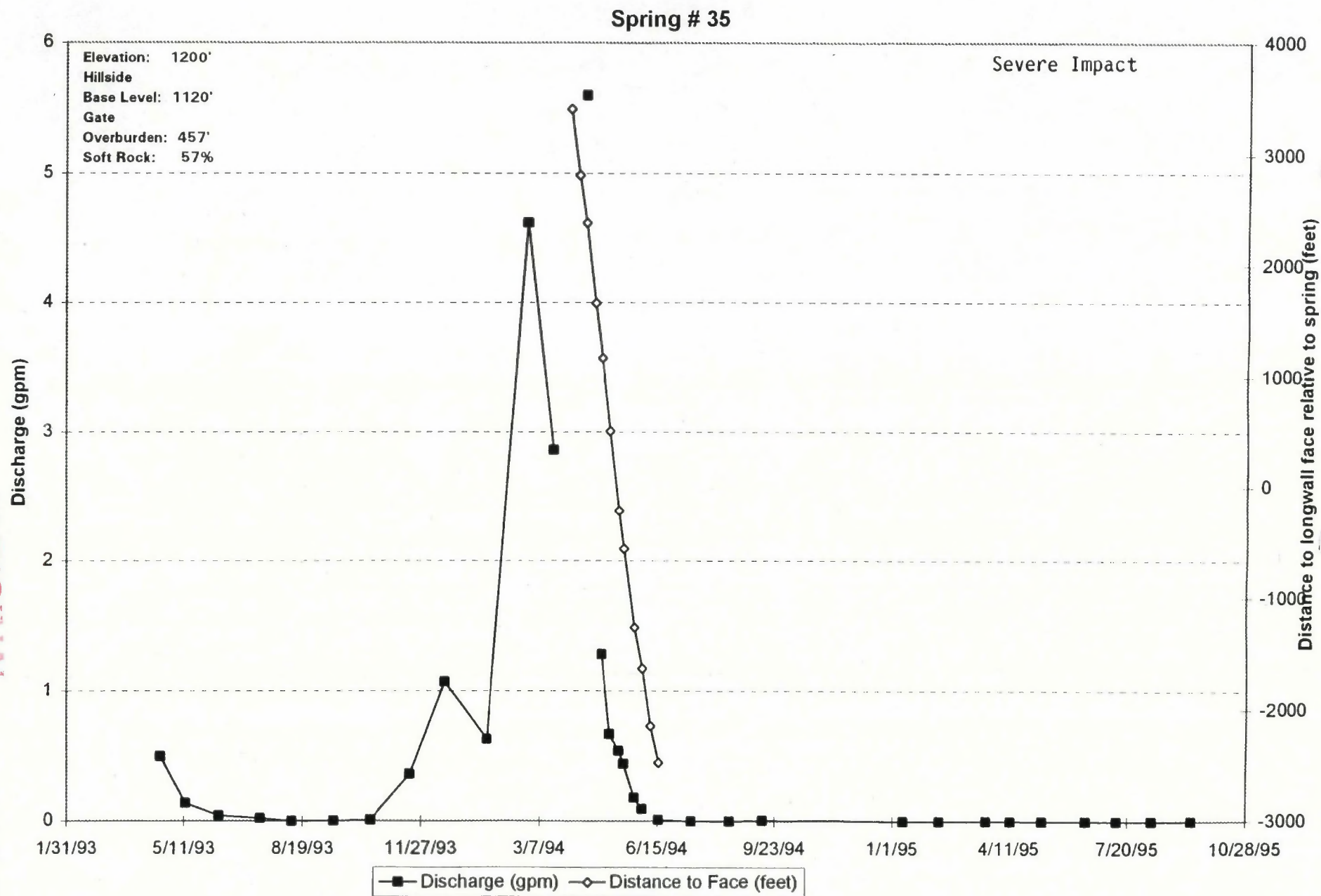
ORIGINAL

D0360-7

JAN 30 1998

TOVCC 21534

ORIGINAL
D0360-7



Prepared by: Moody and Assoc., Inc. 4/13/97

TOVCC 21535

Spring # 36

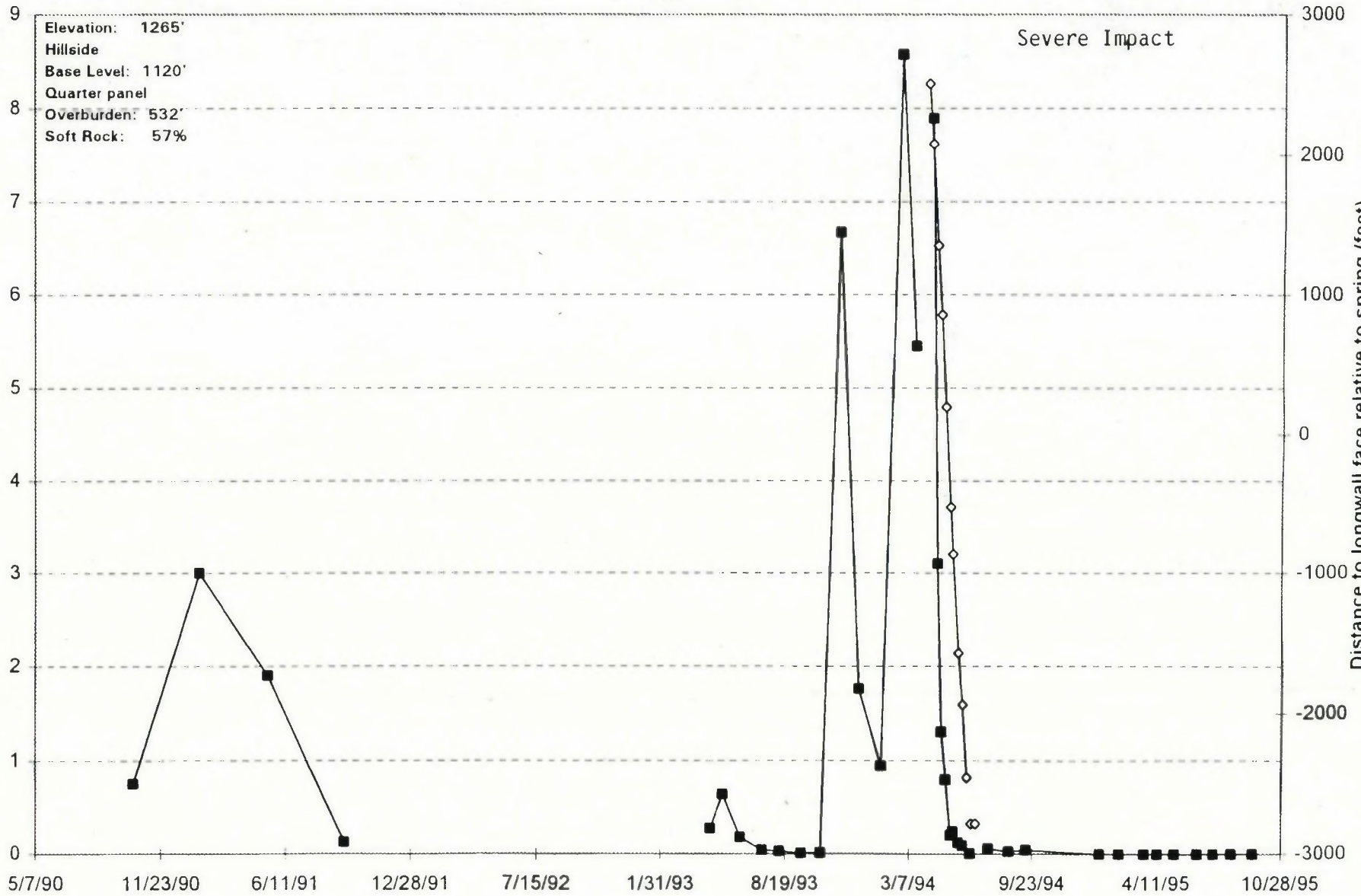
Elevation: 1265'
 Hillside
 Base Level: 1120'
 Quarter panel
 Overburden: 532'
 Soft Rock: 57%

Severe Impact

Discharge (gpm)

Distance to longwall face relative to spring (feet)

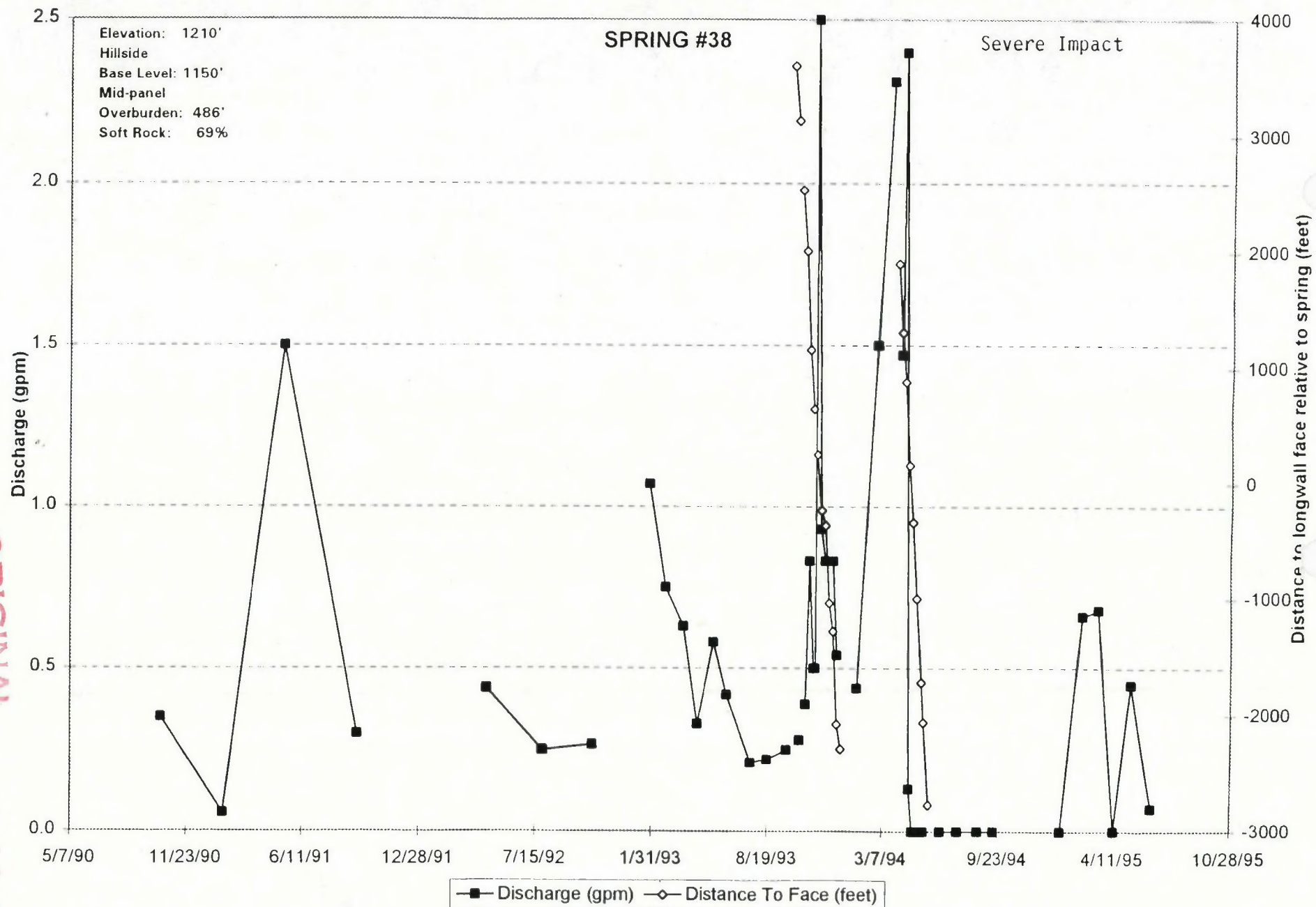
—■— Discharge (gpm) —◇— Distance to Face (feet)



Prepared by: Moody and Assoc., Inc. 4/14/97

TOVCC 21536

ORIGINAL
00360-7

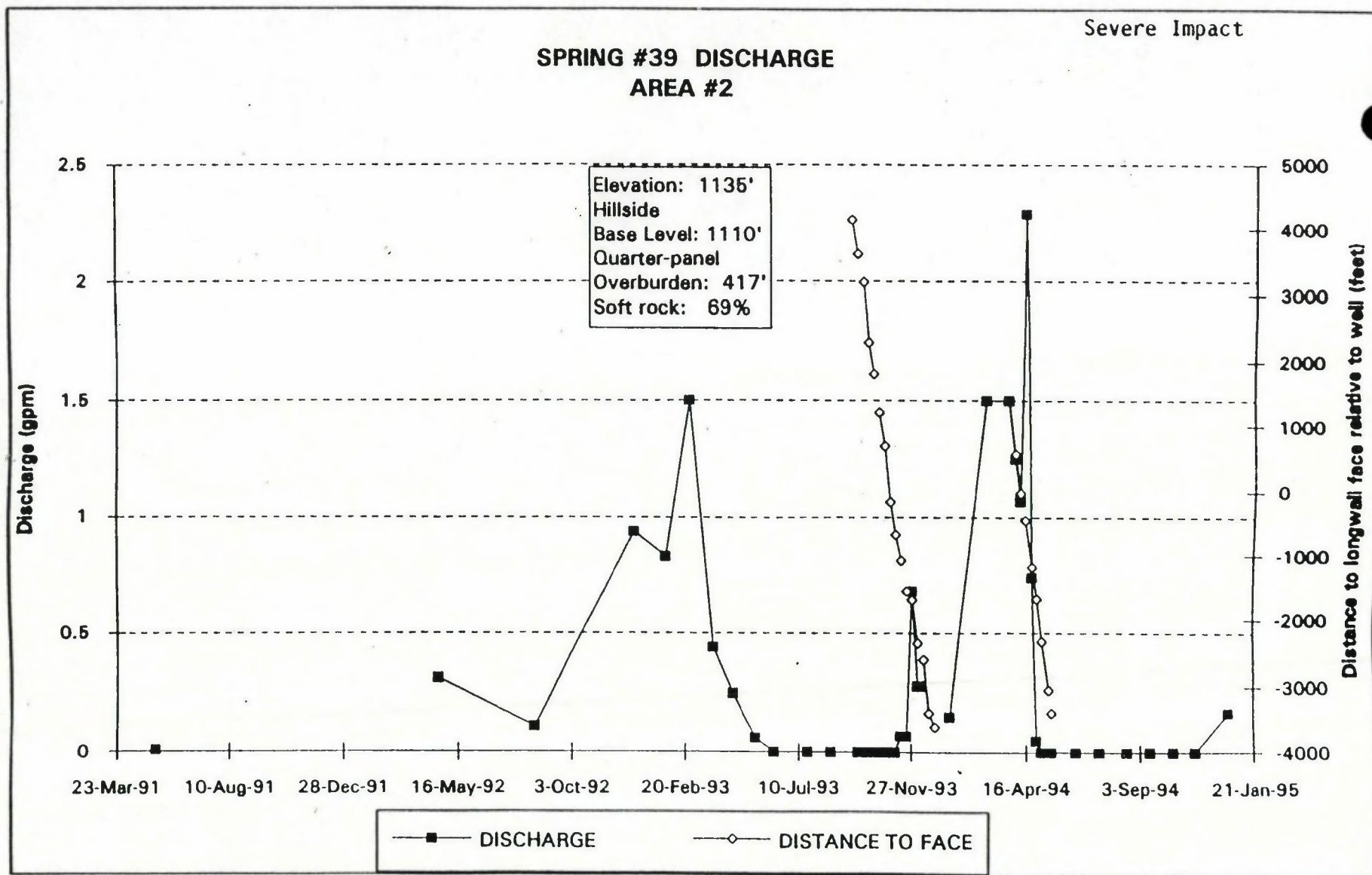


Prepared by: Moody and Assoc., Inc. 4/13/97

TOVCC 21537

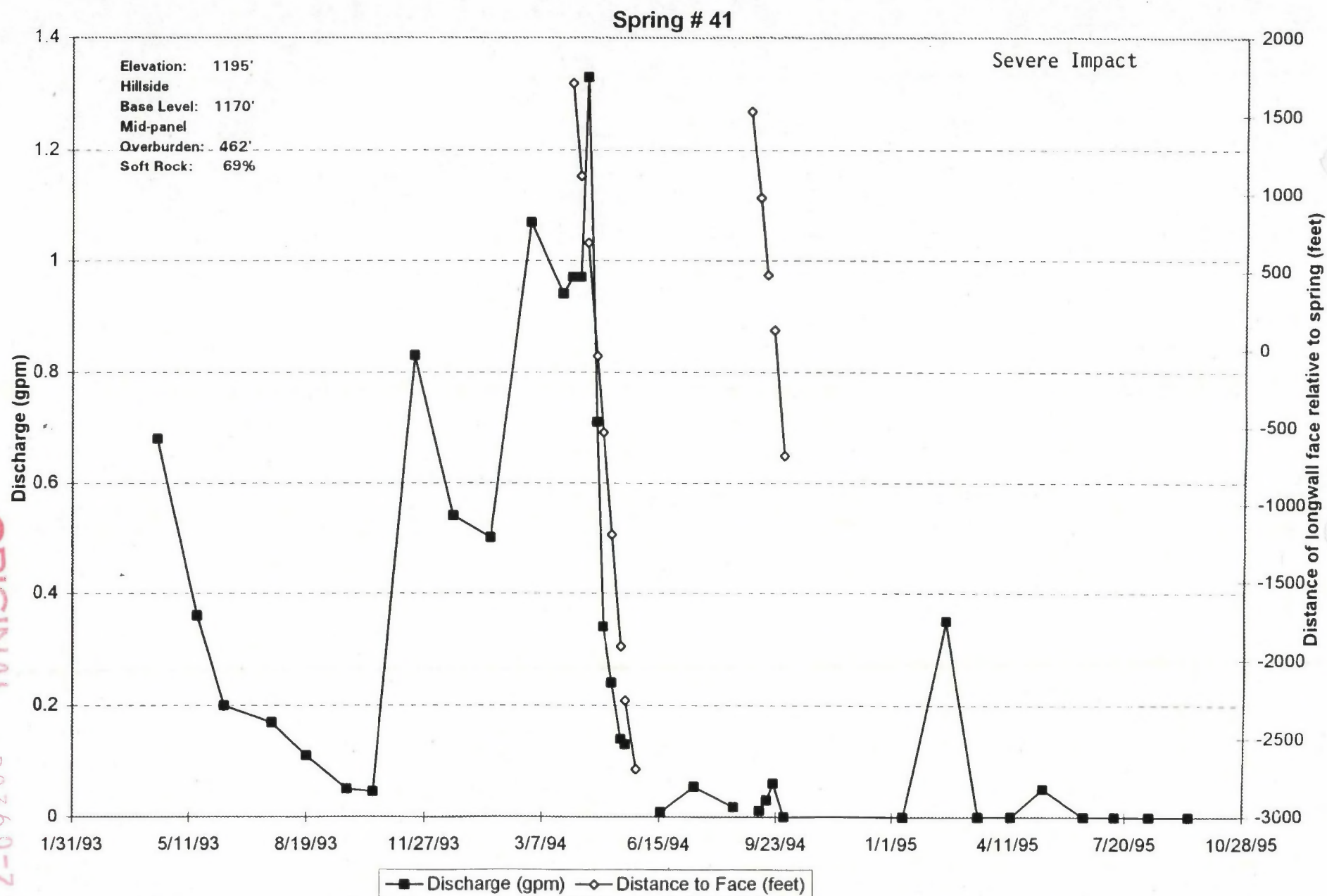
ORIGINAL

D0360-7



TOVCC 21538

ORIGINAL 00360-7



Prepared by: Moody and Assoc., Inc. 4/13/97

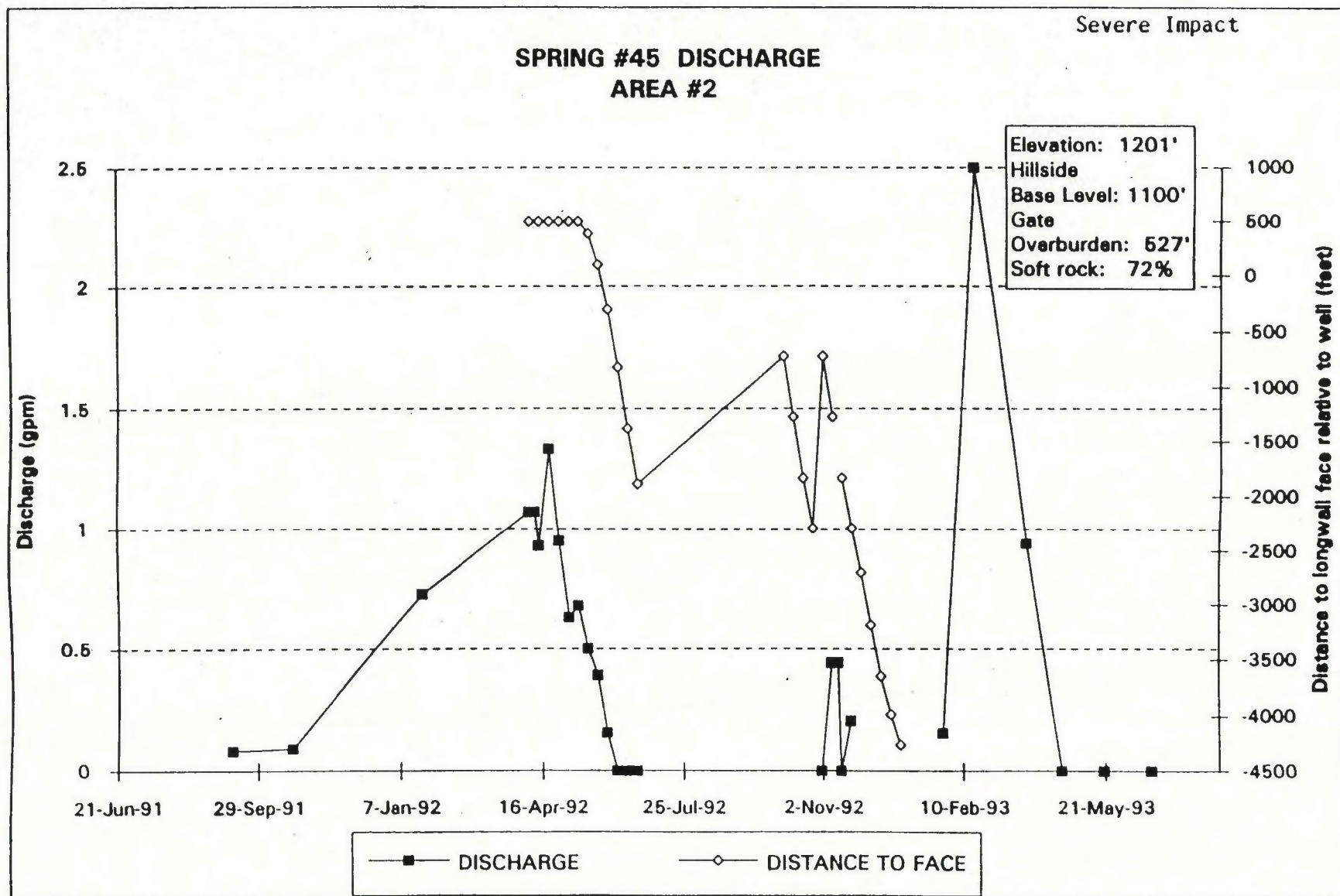
TOVCC 21539

Severe Impact



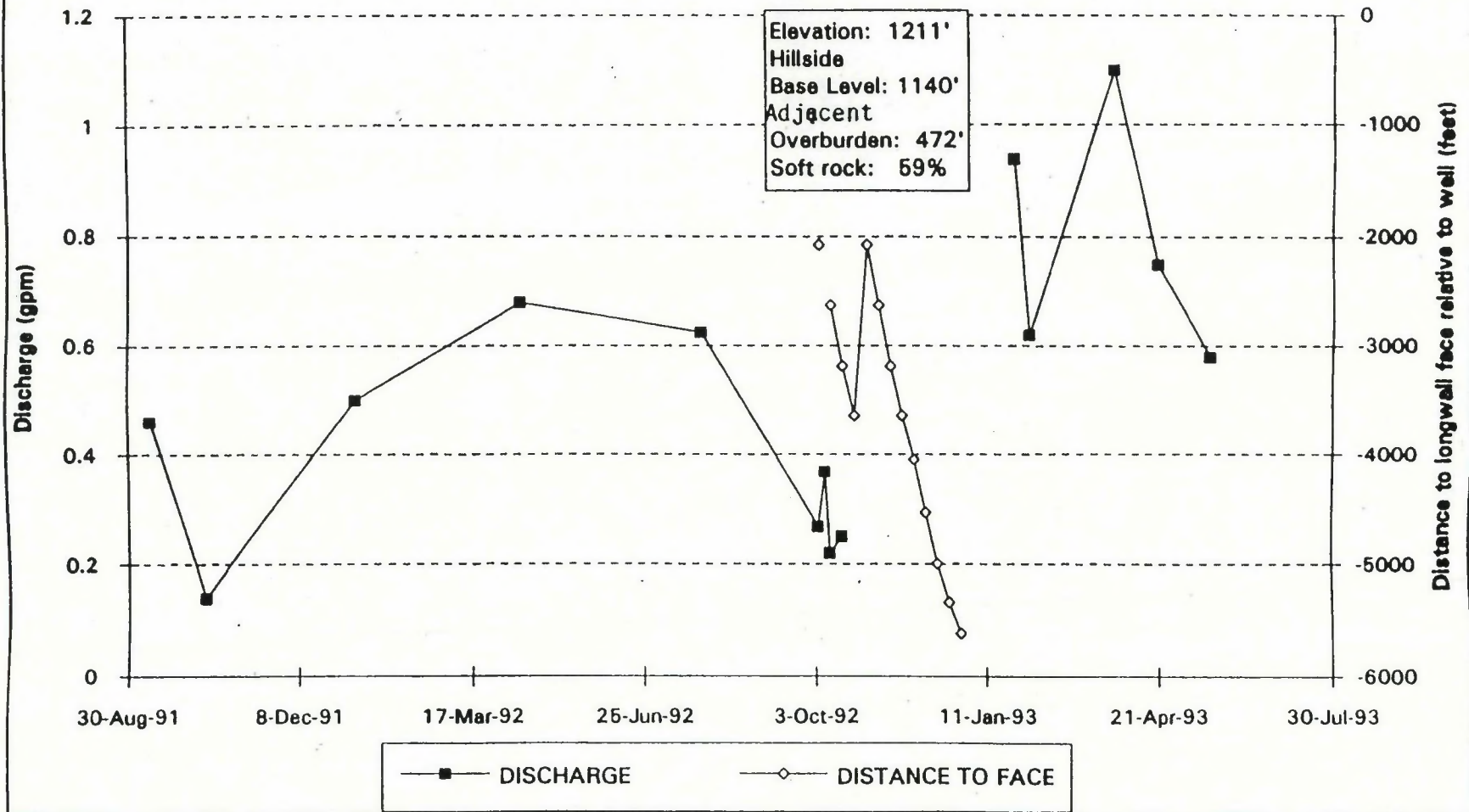
ORIGINAL

D0360-7



SPRING #52 DISCHARGE
AREA #2

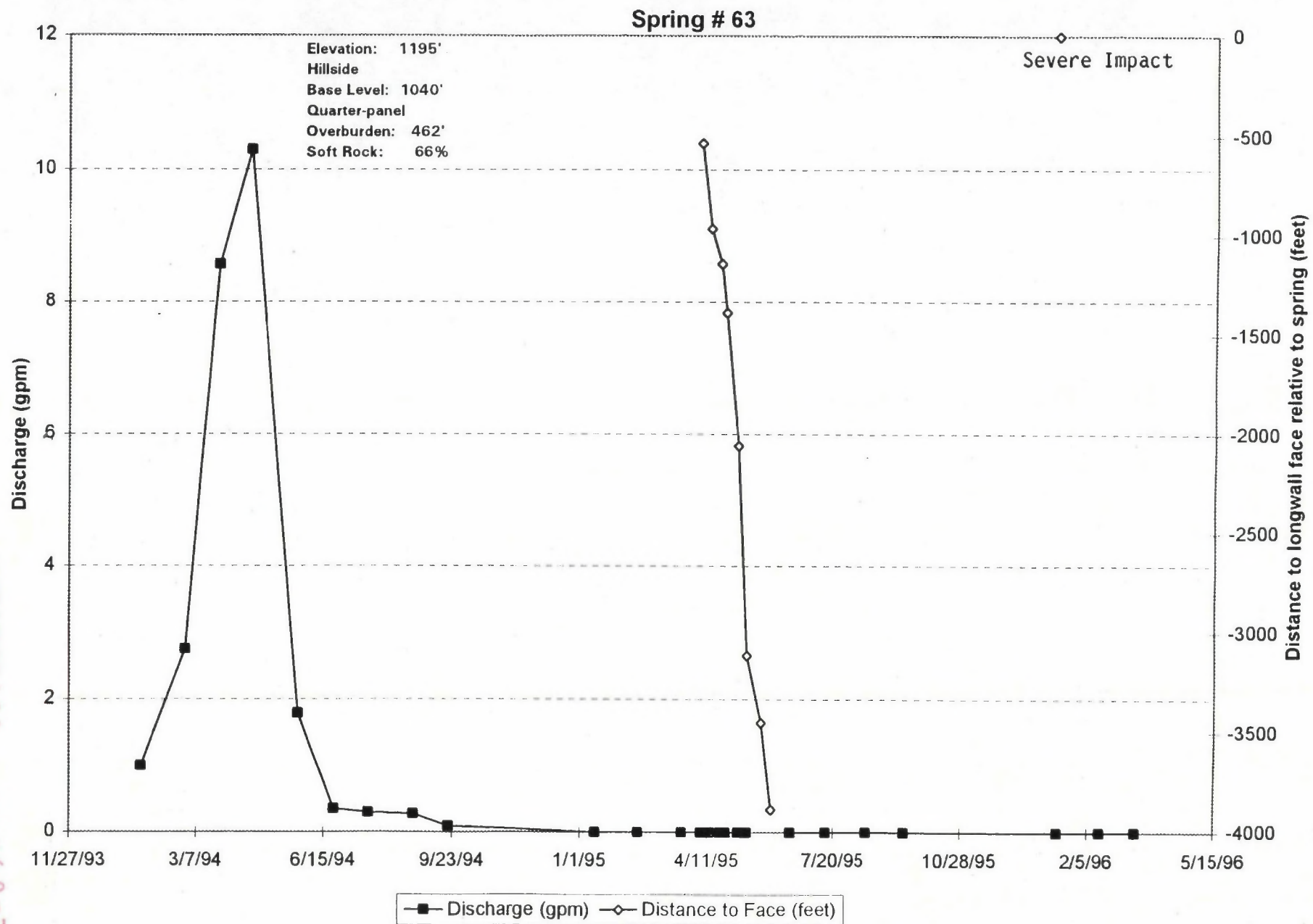
Minimal Impact



ORIGINAL

D0360-7

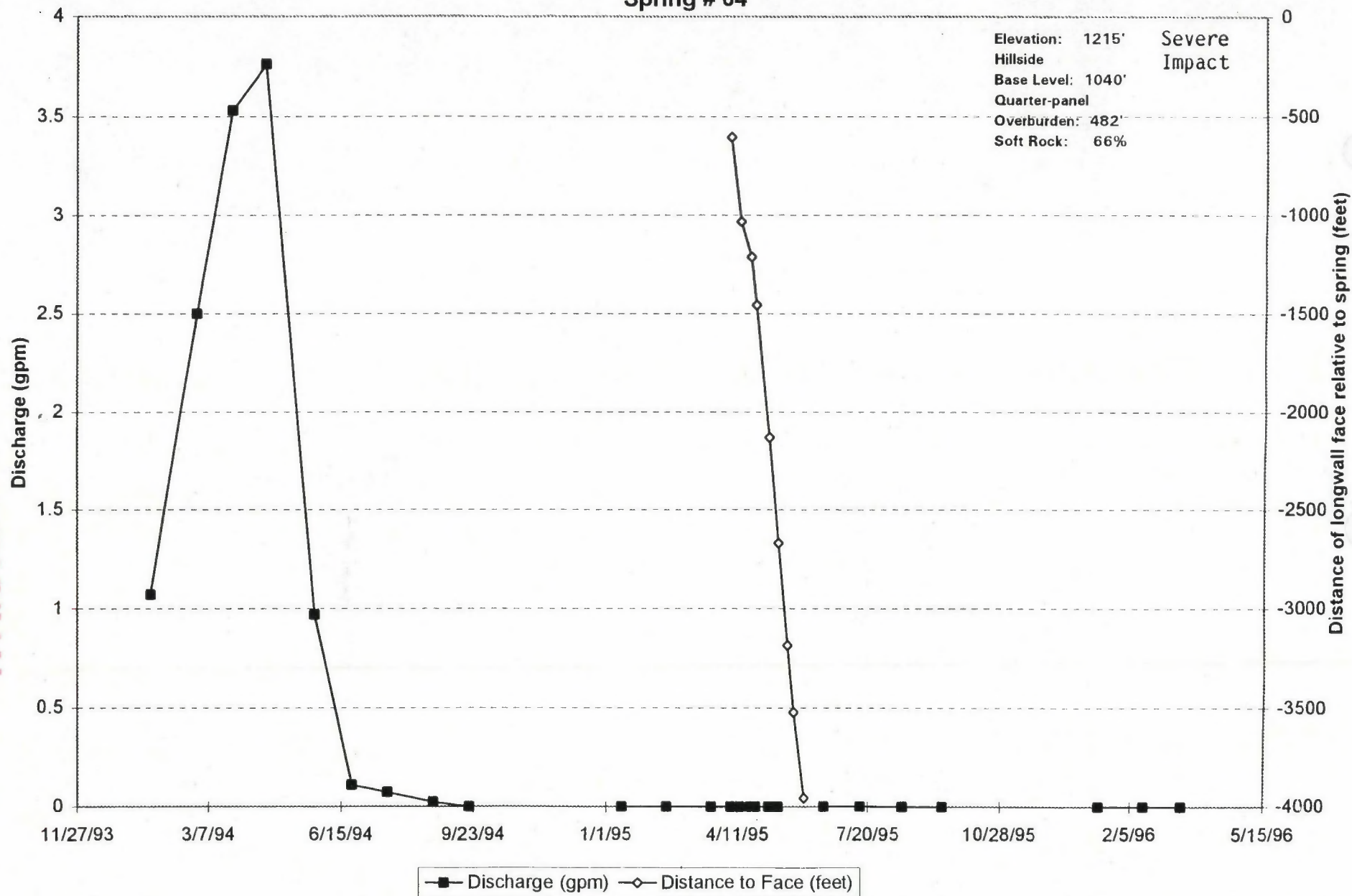
ORIGINAL
D0360-7



Prepared by: Moody and Assoc., Inc. 4/13/97

TOVCC 21543

Spring # 64

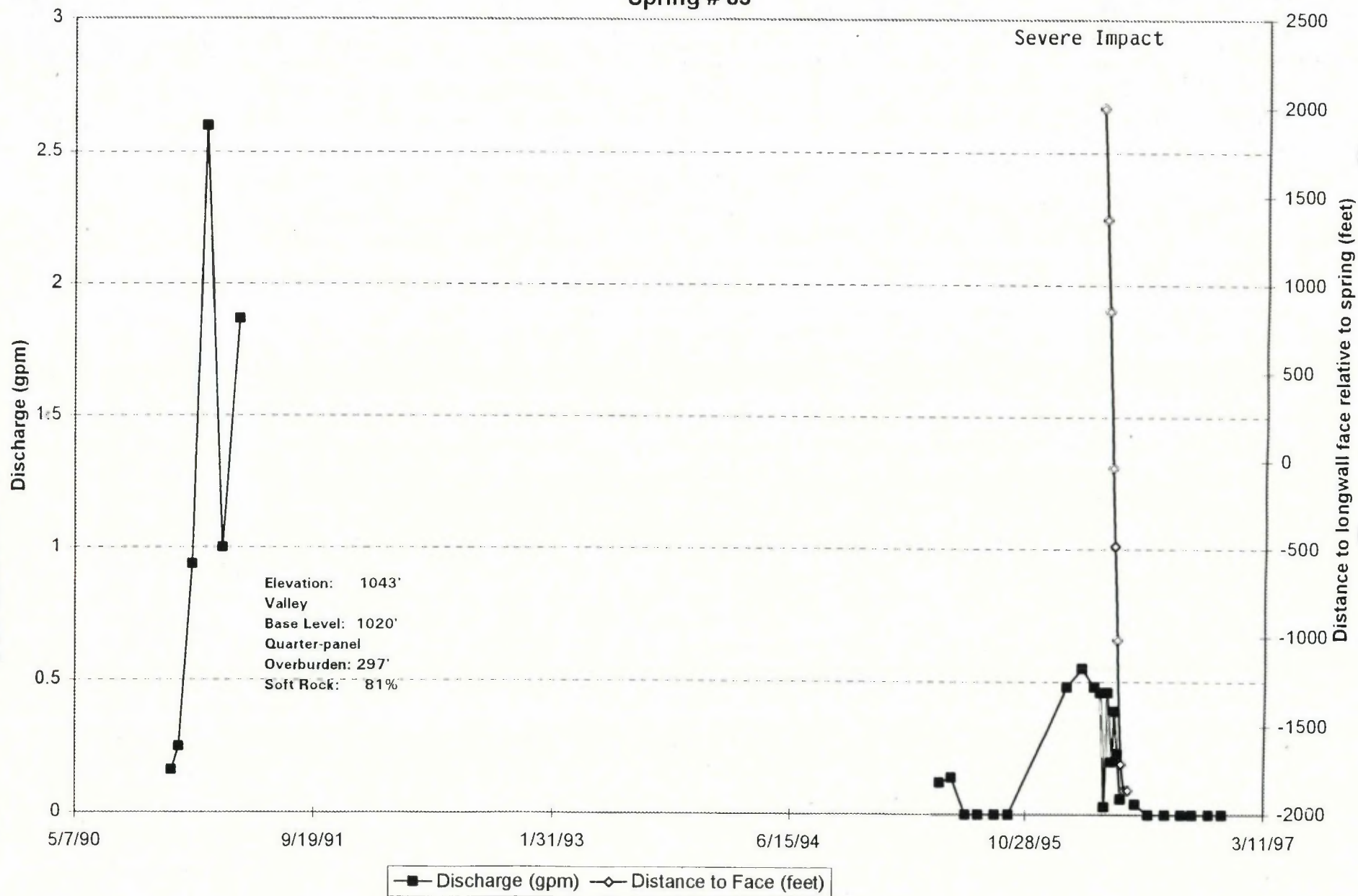


Prepared by : Moody and Assoc., Inc. 4/13/97

TOVCC 21544

ORIGINAL
D0360-7

Spring # 83

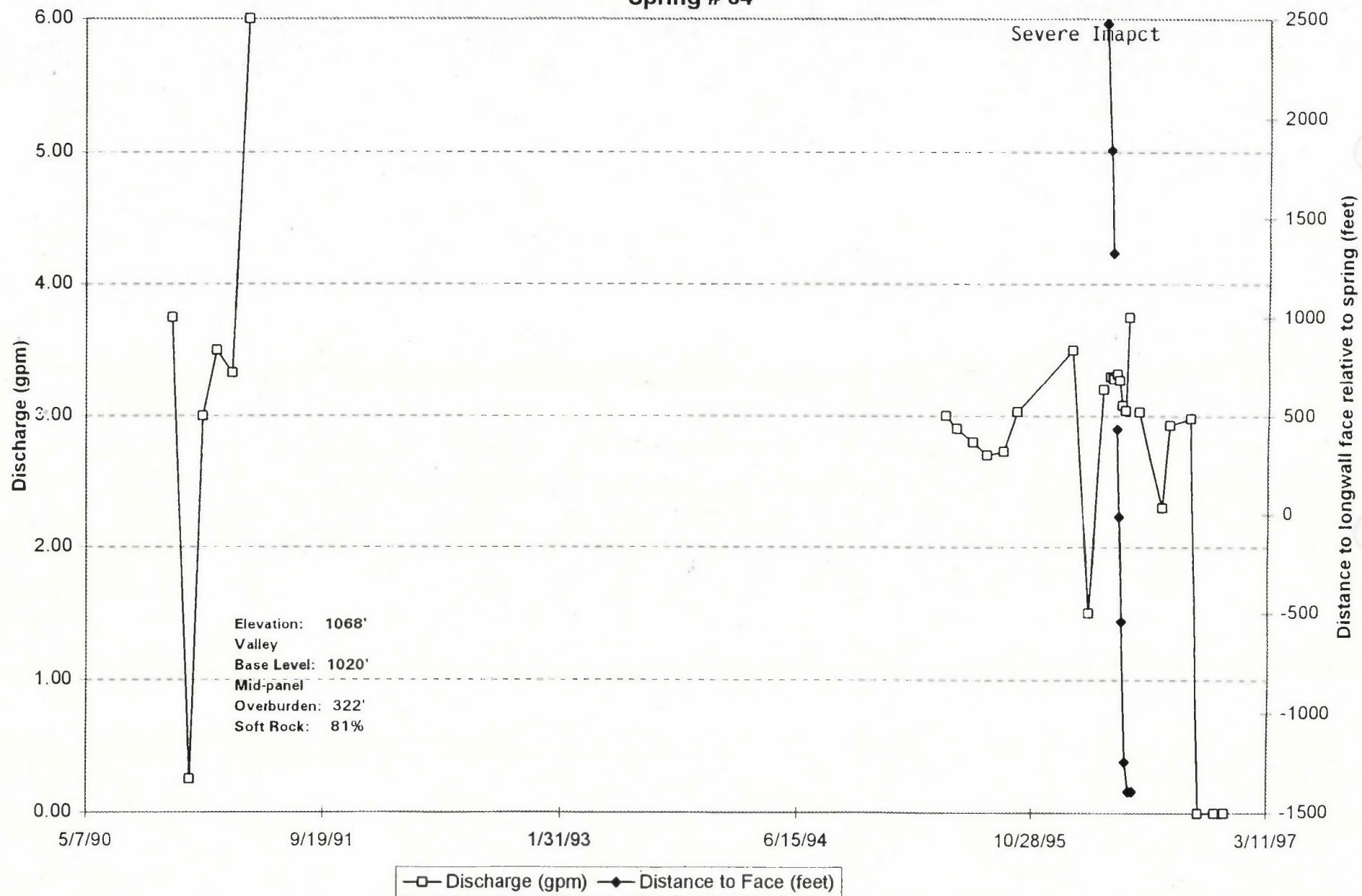


Prepared by: Moody and Assoc., Inc. 4/13/97

TOVCC 21545

ORIGINAL
D0360-7

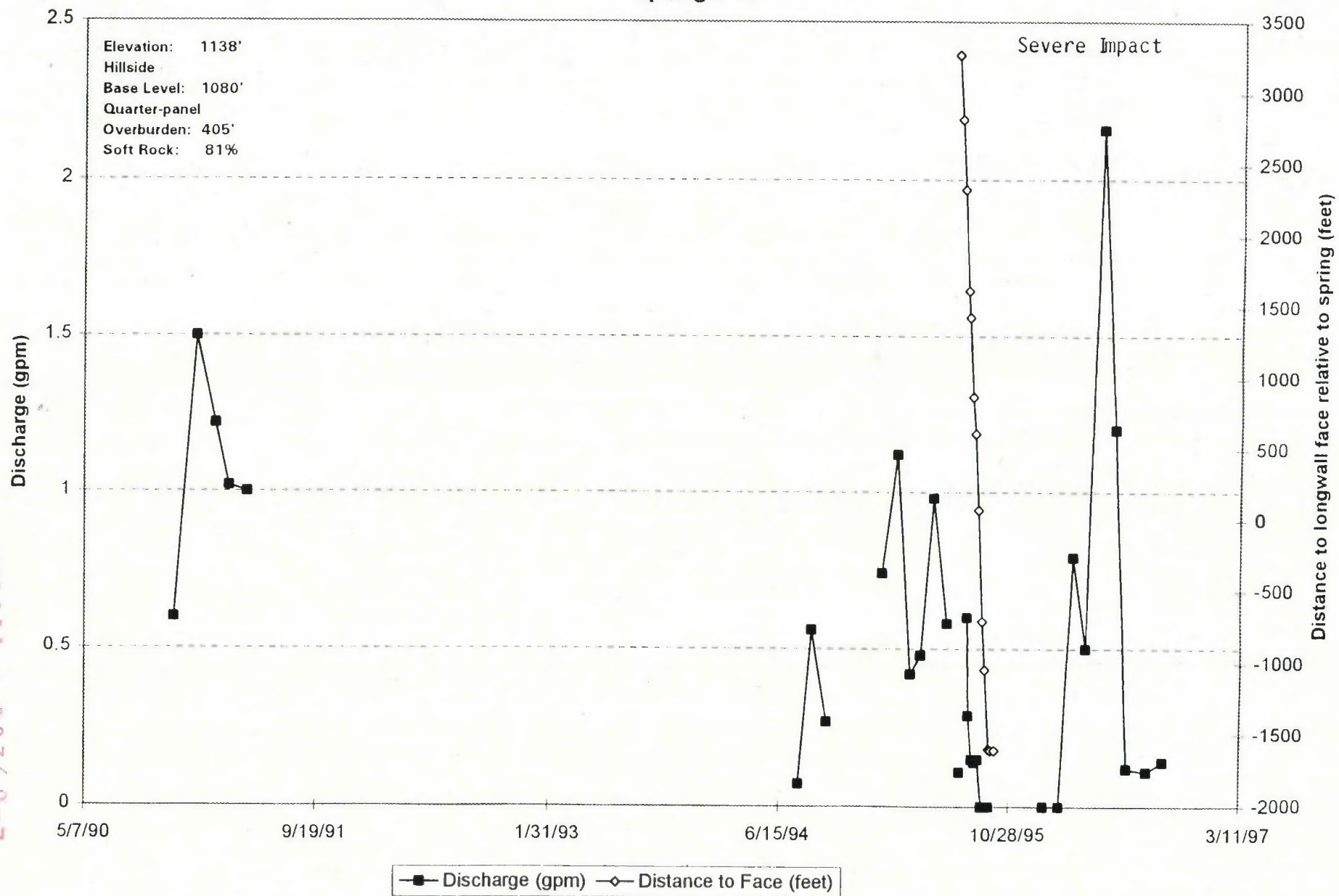
Spring # 84



Prepared by: Moody and Assoc., Inc. 4/13/97

TOVCC 21546

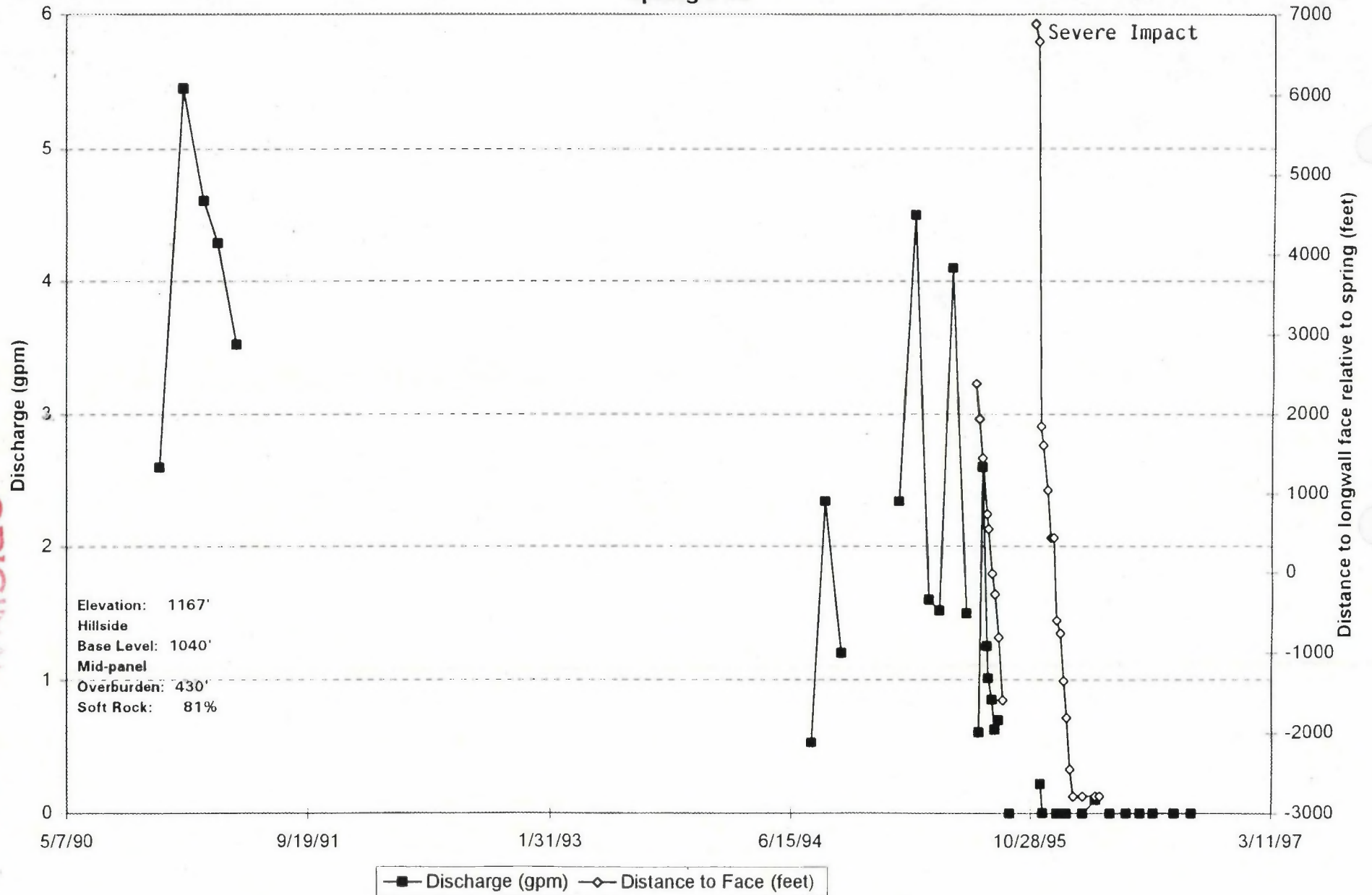
Spring # 89



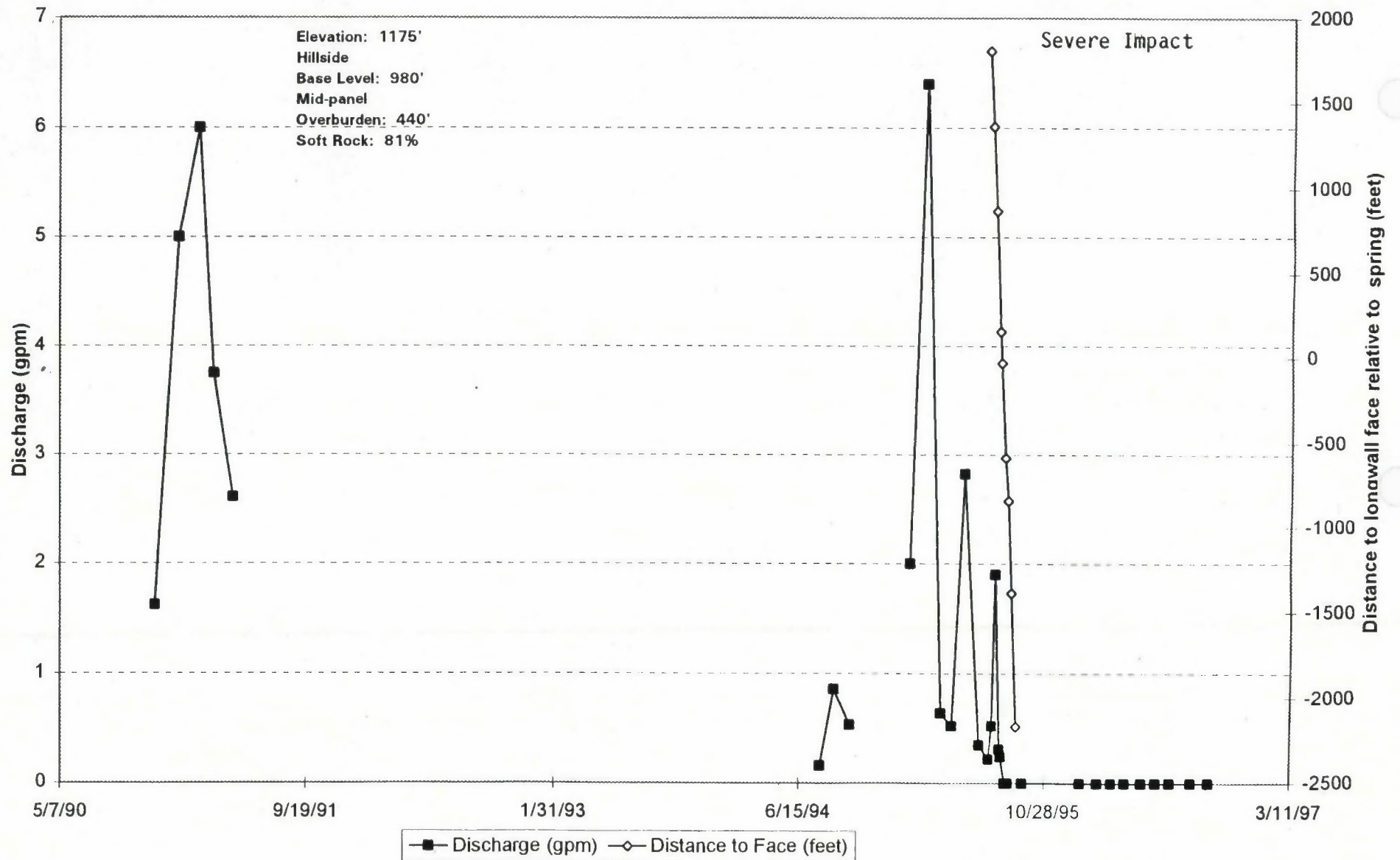
Prepared by: Moody and Assoc., Inc. 4/13/97

TOVCC 21547

Spring # 90



Spring # 92



Prepared by: Moody and Assoc., Inc. 4/13/97

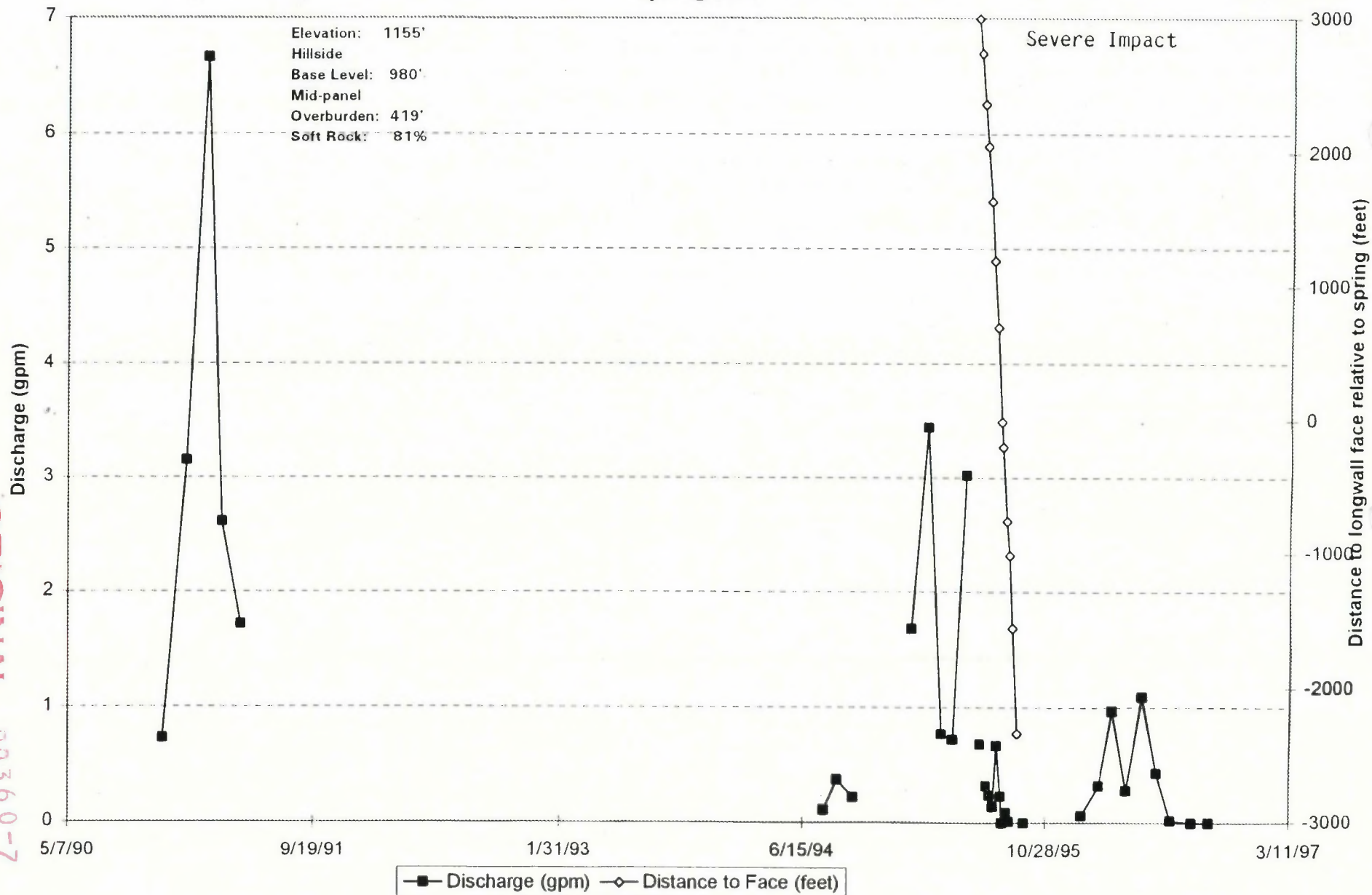
TOVCC 21549

ORIGINAL

D0360-7

Spring # 93

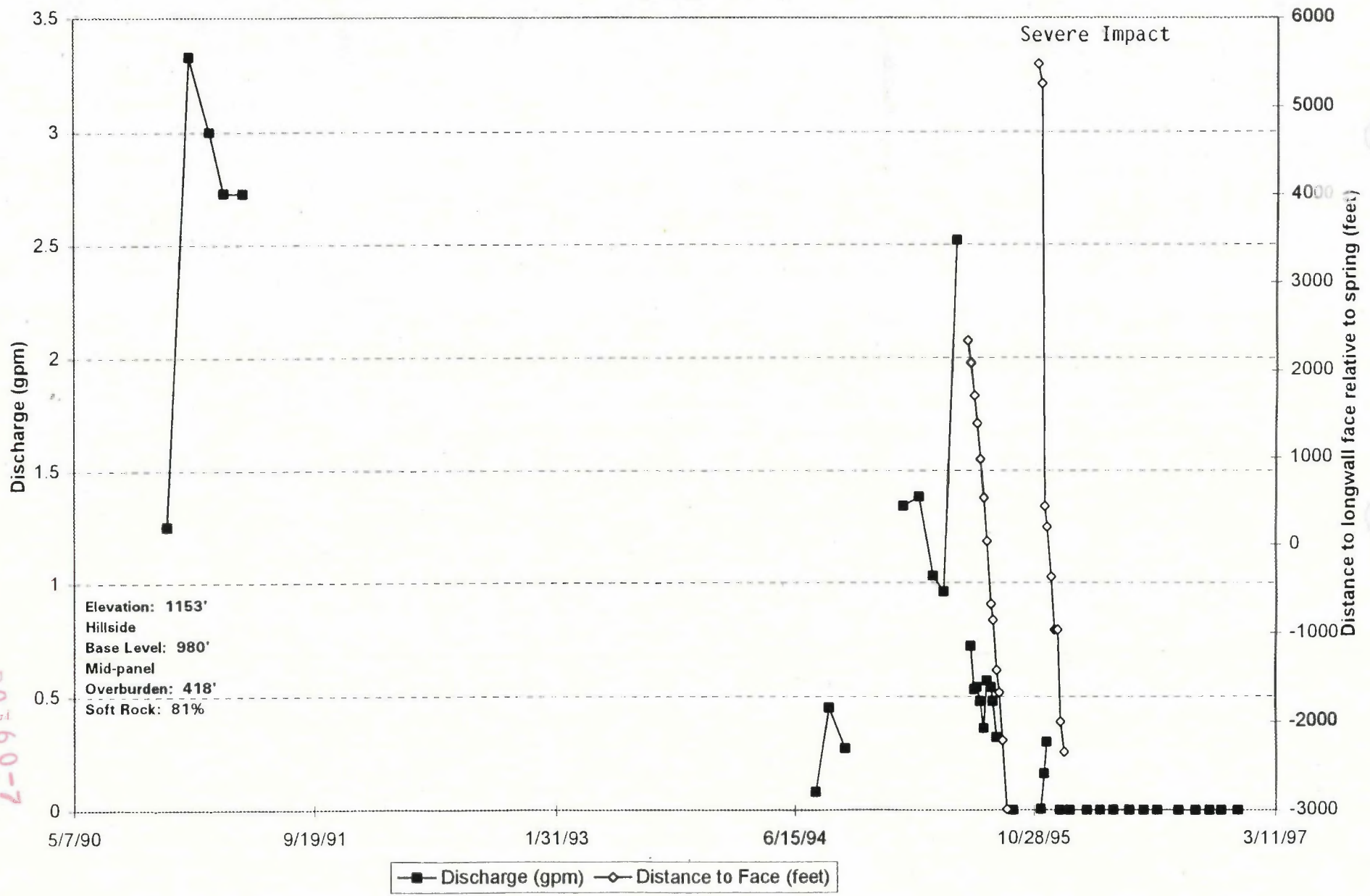
Elevation: 1155'
 Hillside
 Base Level: 980'
 Mid-panel
 Overburden: 419'
 Soft Rock: 81%



ORIGINAL

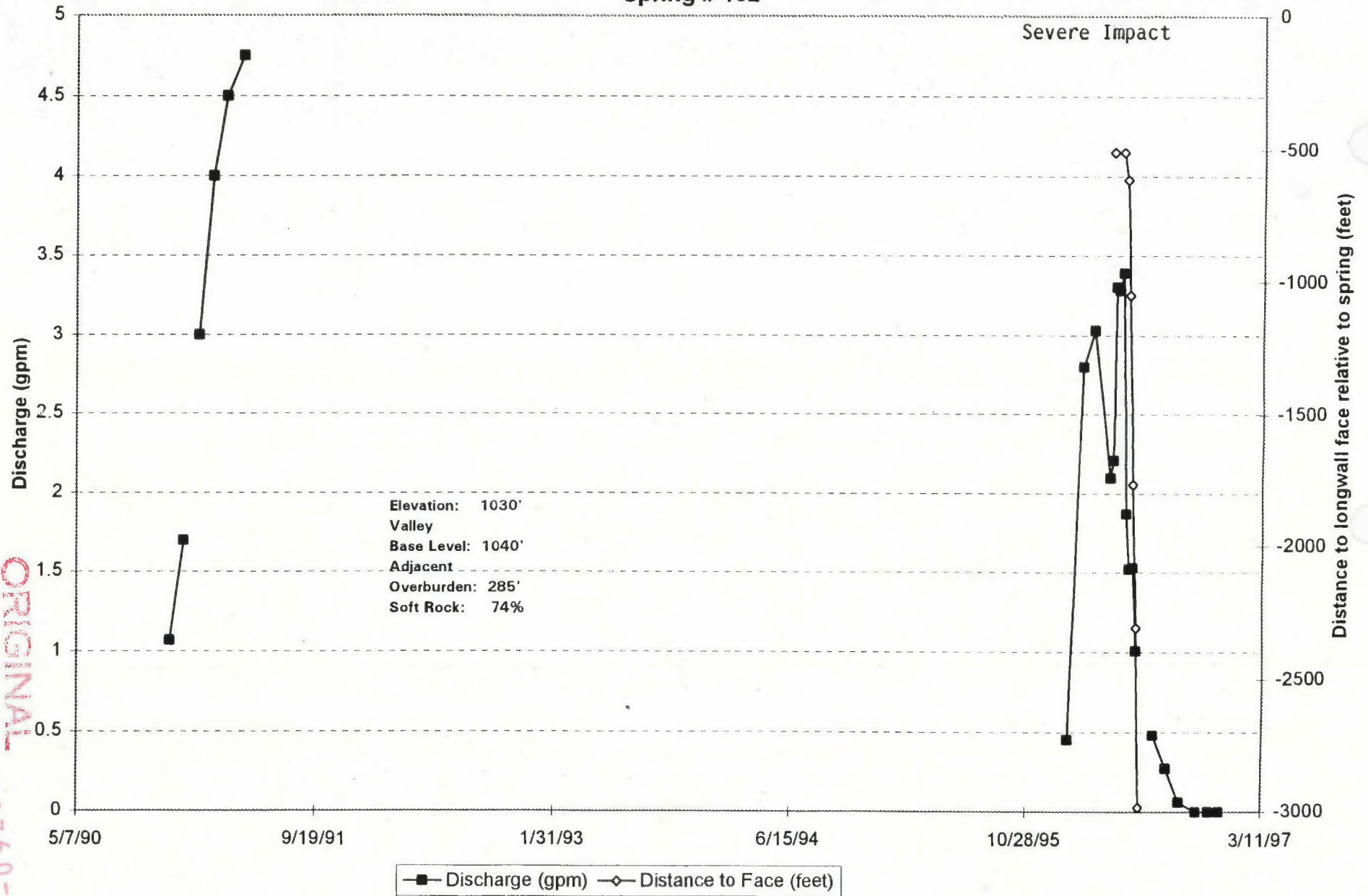
D0560-7

Spring # 94



Prepared by: Moody and Assoc., Inc. 4/13/97

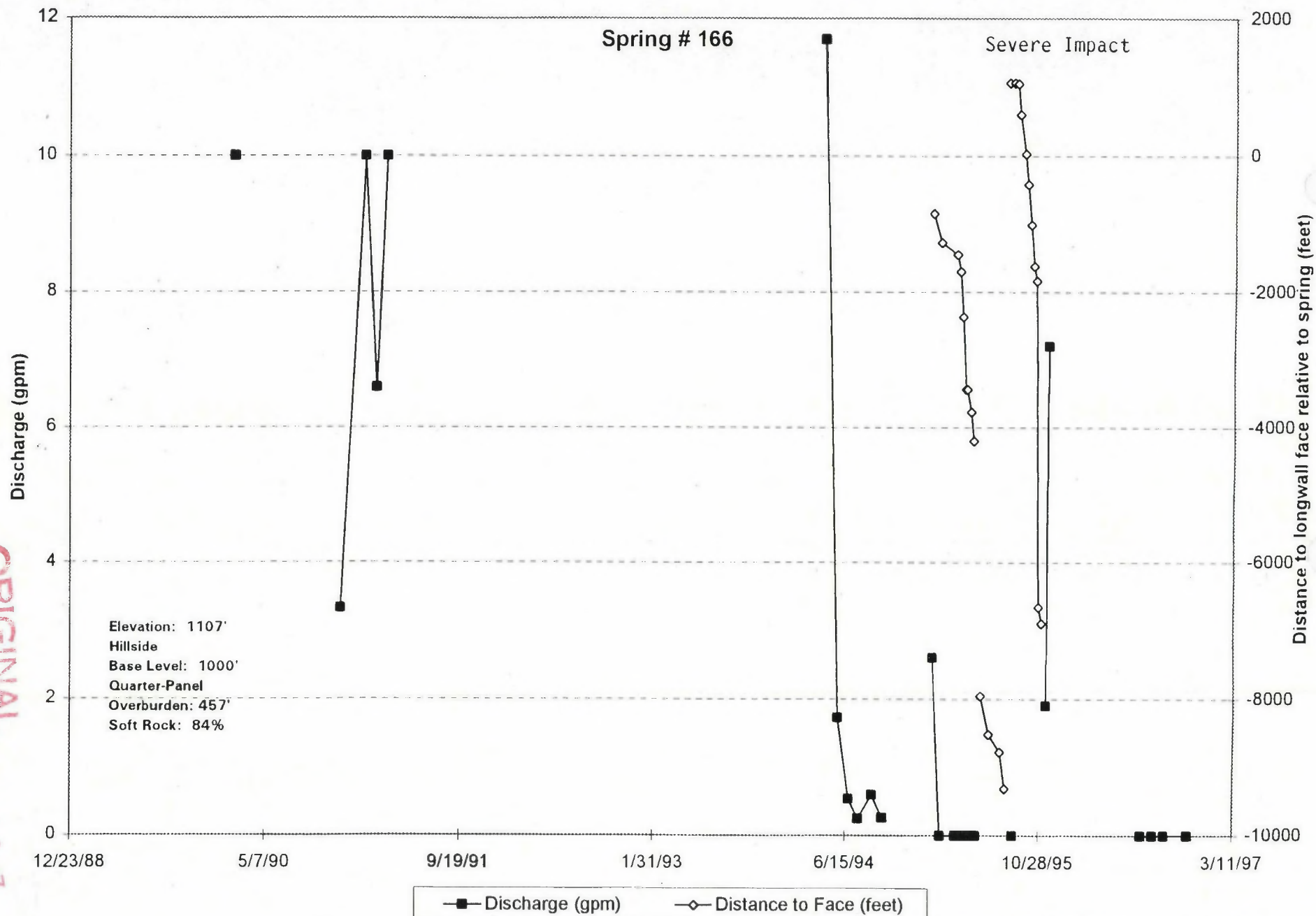
Spring # 162



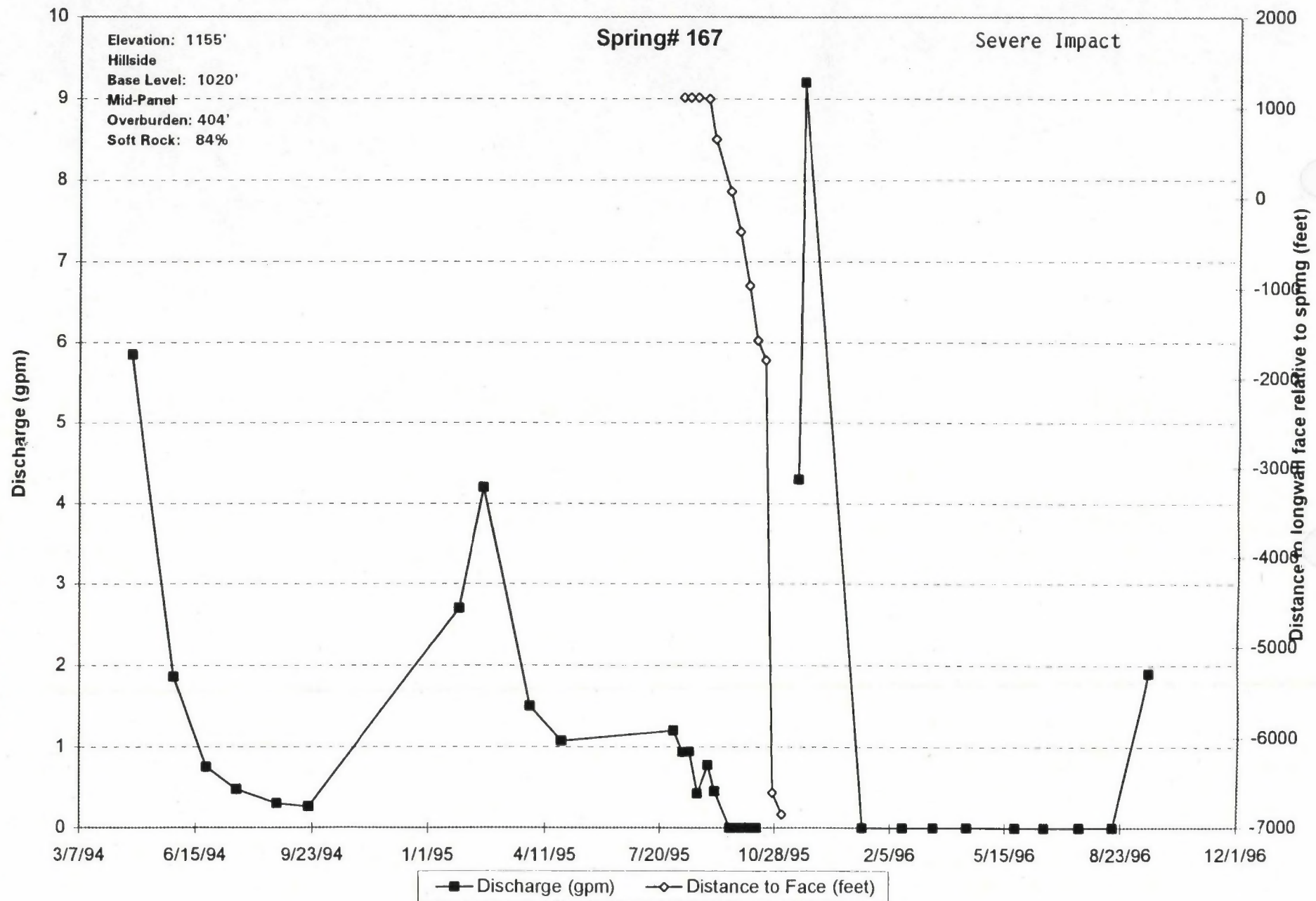
Prepared by: Moody and Assoc., Inc. 4/13/97

TOVCC 21552

ORIGINAL
D0360-7



ORIGINAL
00360-7

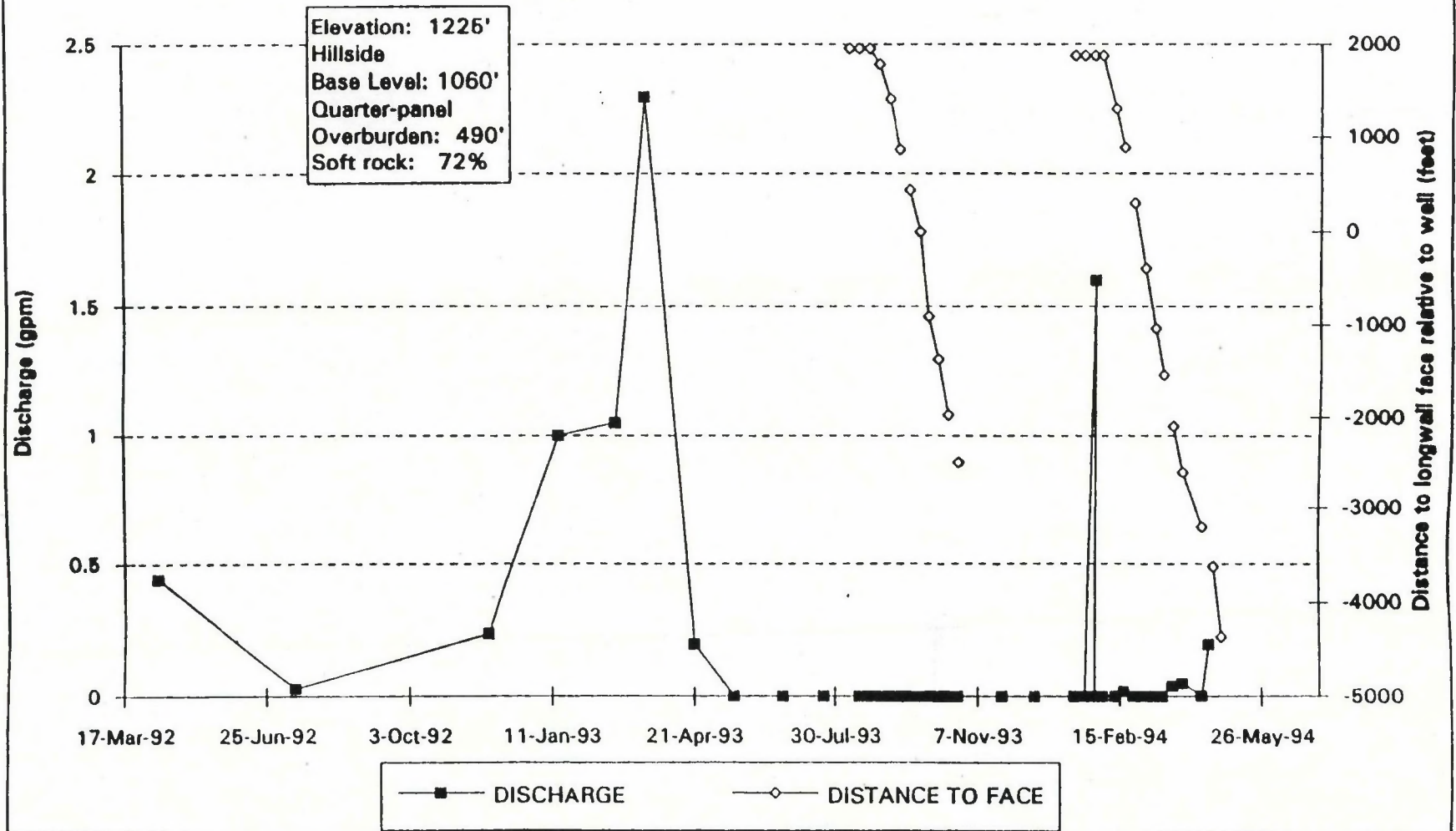


Prepared by: Moody and Assoc., Inc 4/13/97

TOVCC 21554

SPRING #168 DISCHARGE AREA #2

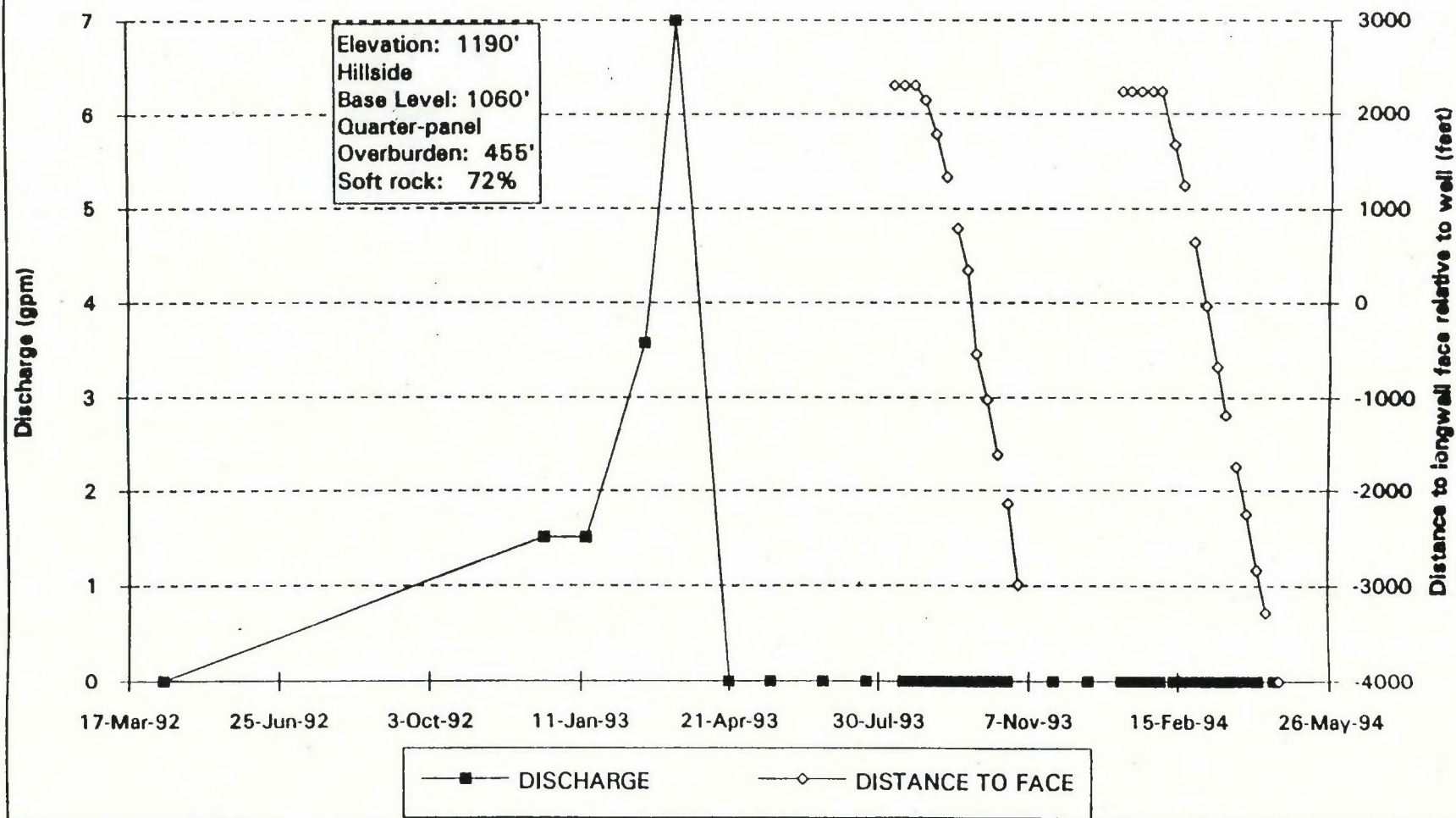
Severe Impact



ORIGINAL
D0360-7

SPRING #170 DISCHARGE AREA #2

Severe Impact

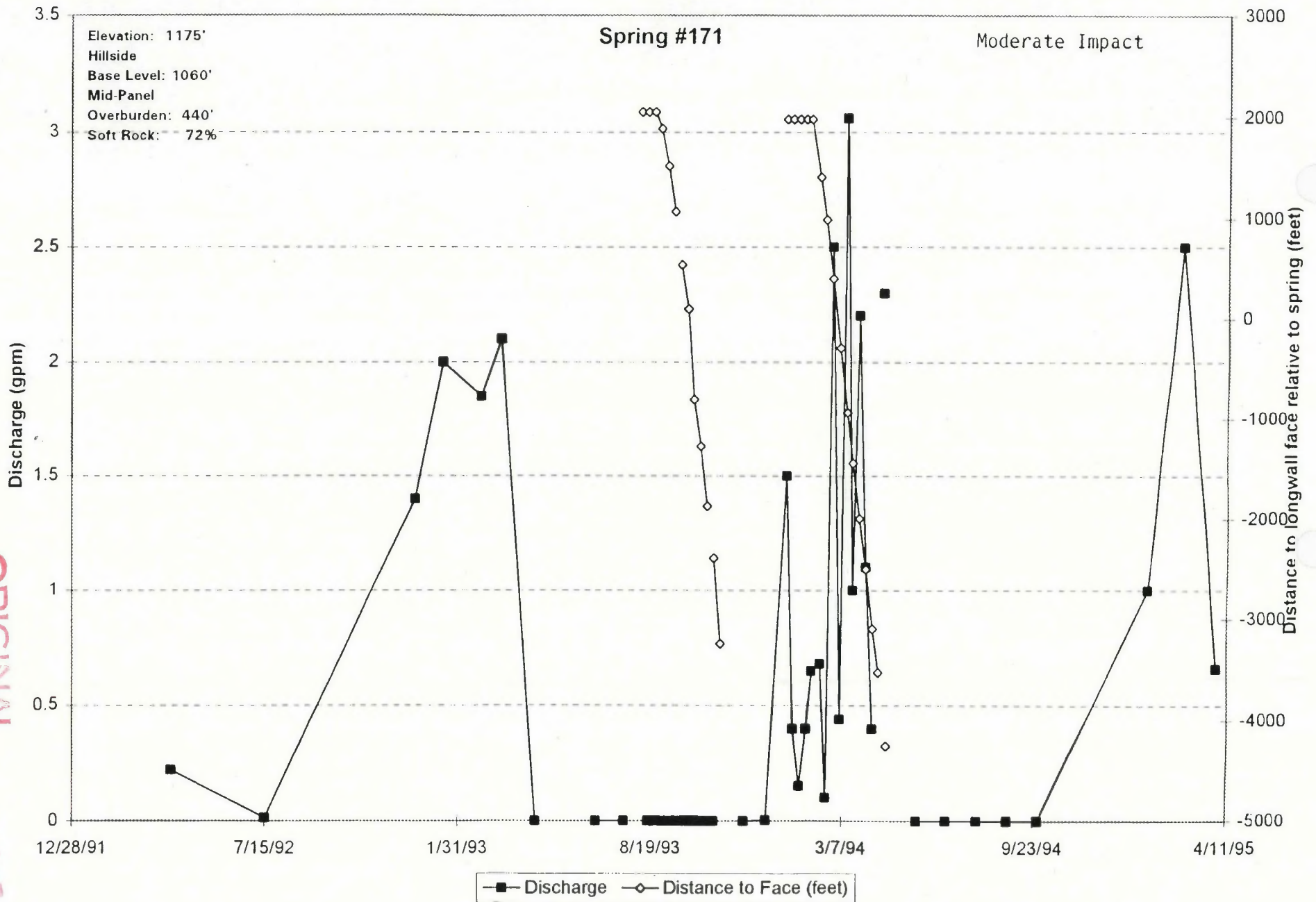


ORIGINAL
D0360-7

Spring #171

Moderate Impact

Elevation: 1175'
Hillside
Base Level: 1060'
Mid-Panel
Overburden: 440'
Soft Rock: 72%



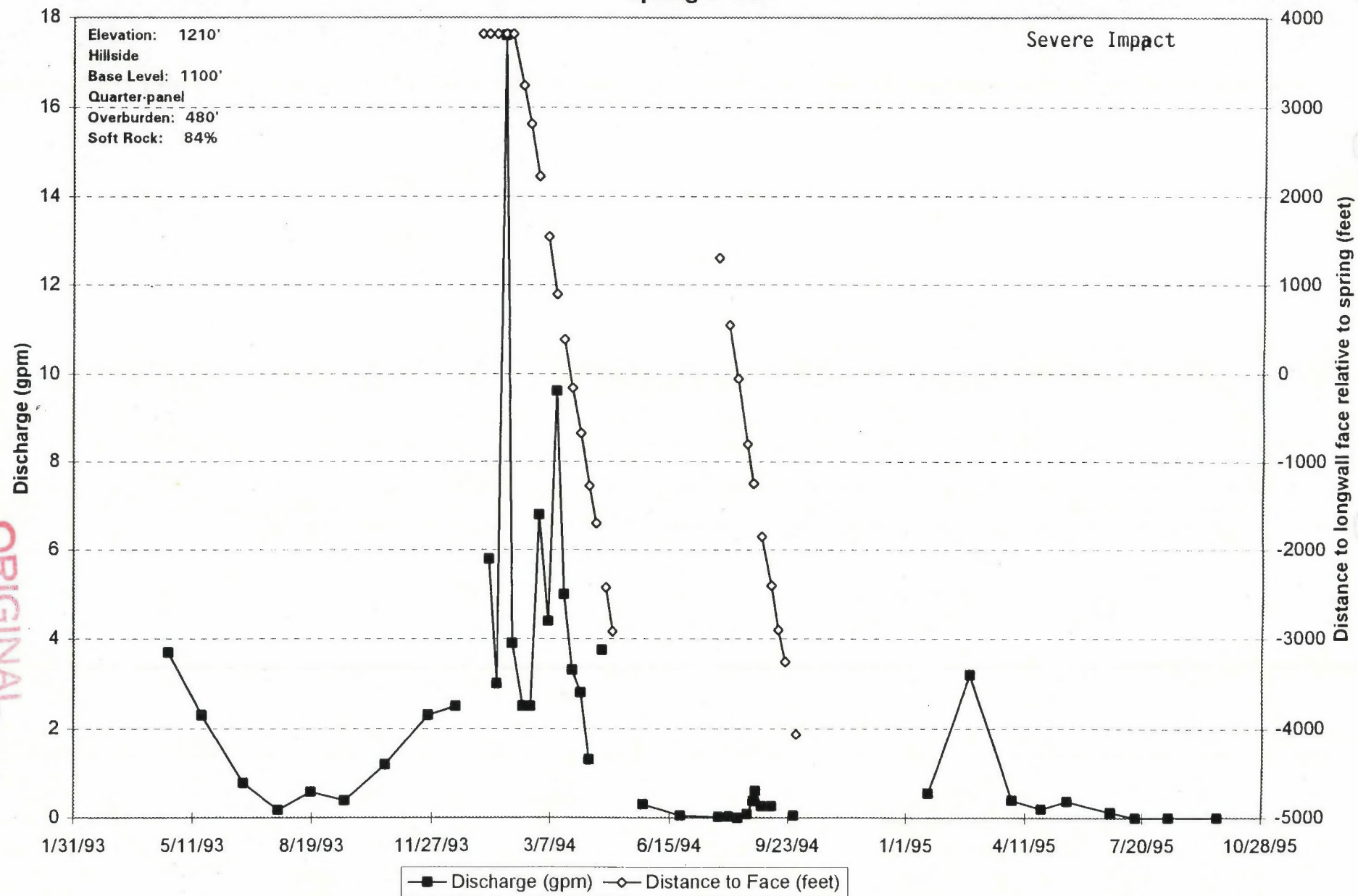
Prepared by: Moody and Assoc., Inc. 4/13/97

TOVCC 21557

ORIGINAL

036027

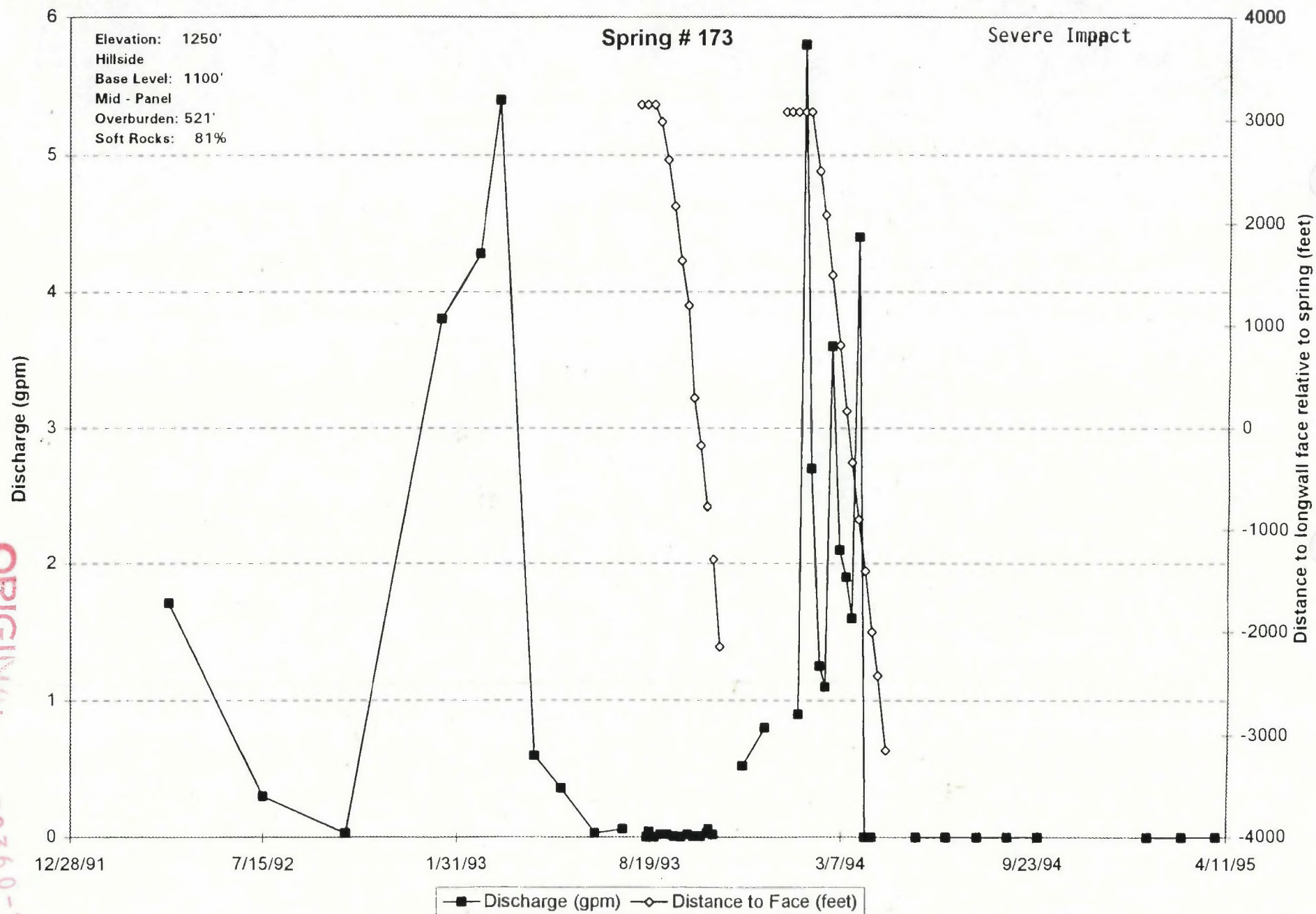
Spring # 172



Prepared by: Moody and Assoc., Inc. 4/13/97

TOVCC 21558

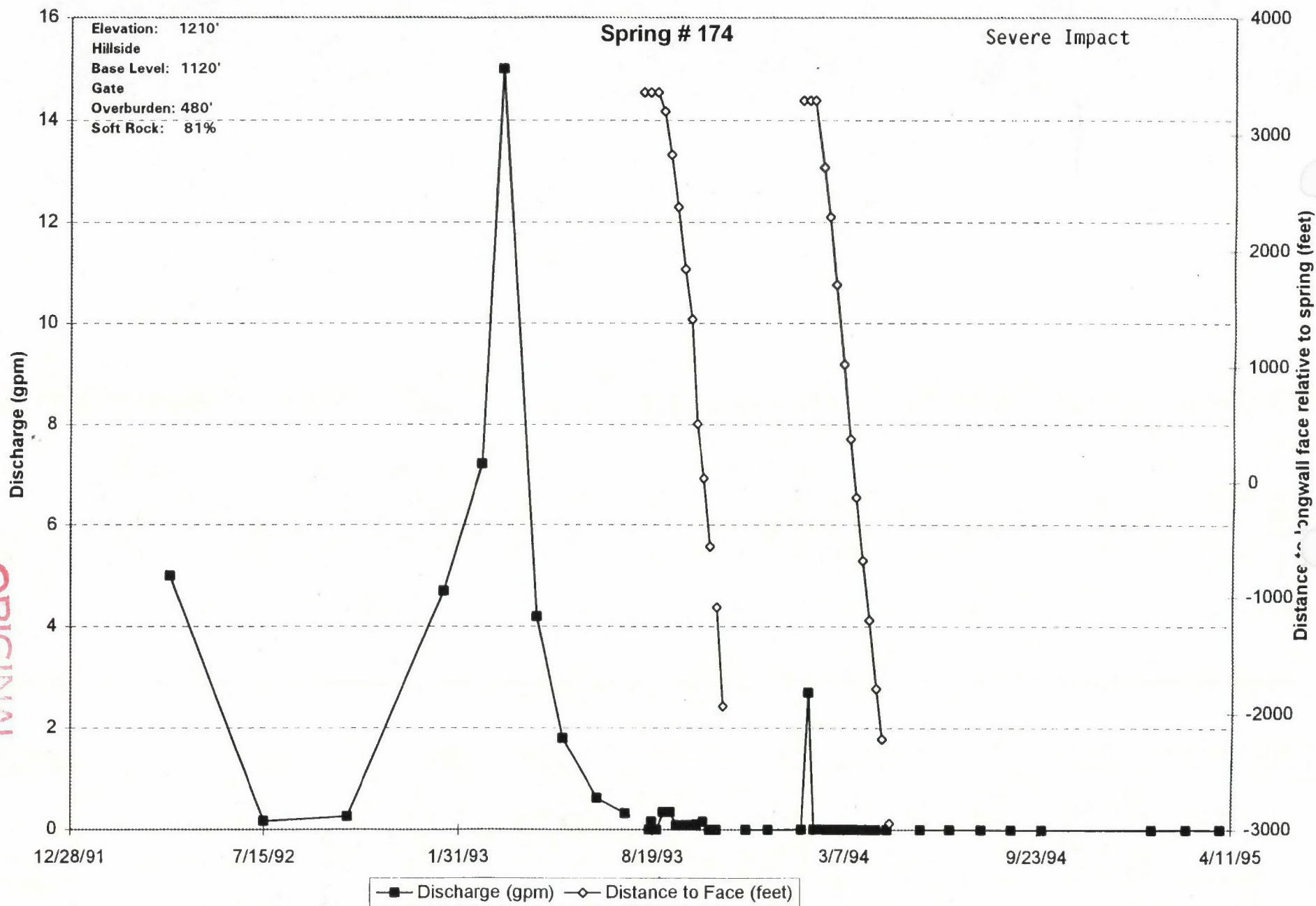
ORIGINAL
D0360-7



Prepared by: Moody and Assoc., Inc. 4/13/97

TOVCC 21559

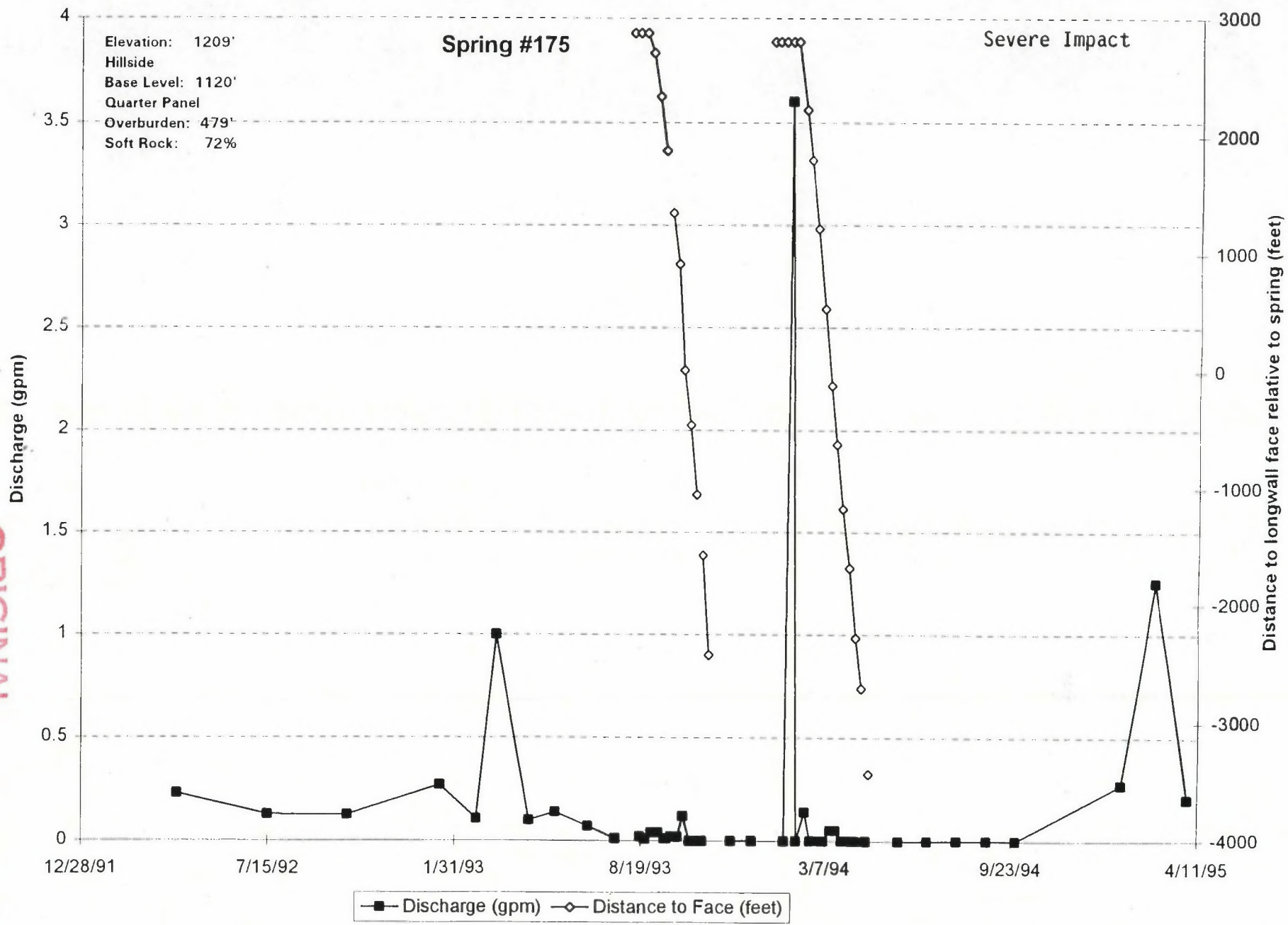
ORIGINAL
D0360-7



Prepared by: Moody and Assoc., Inc. 4/13/97

TOVCC 21560

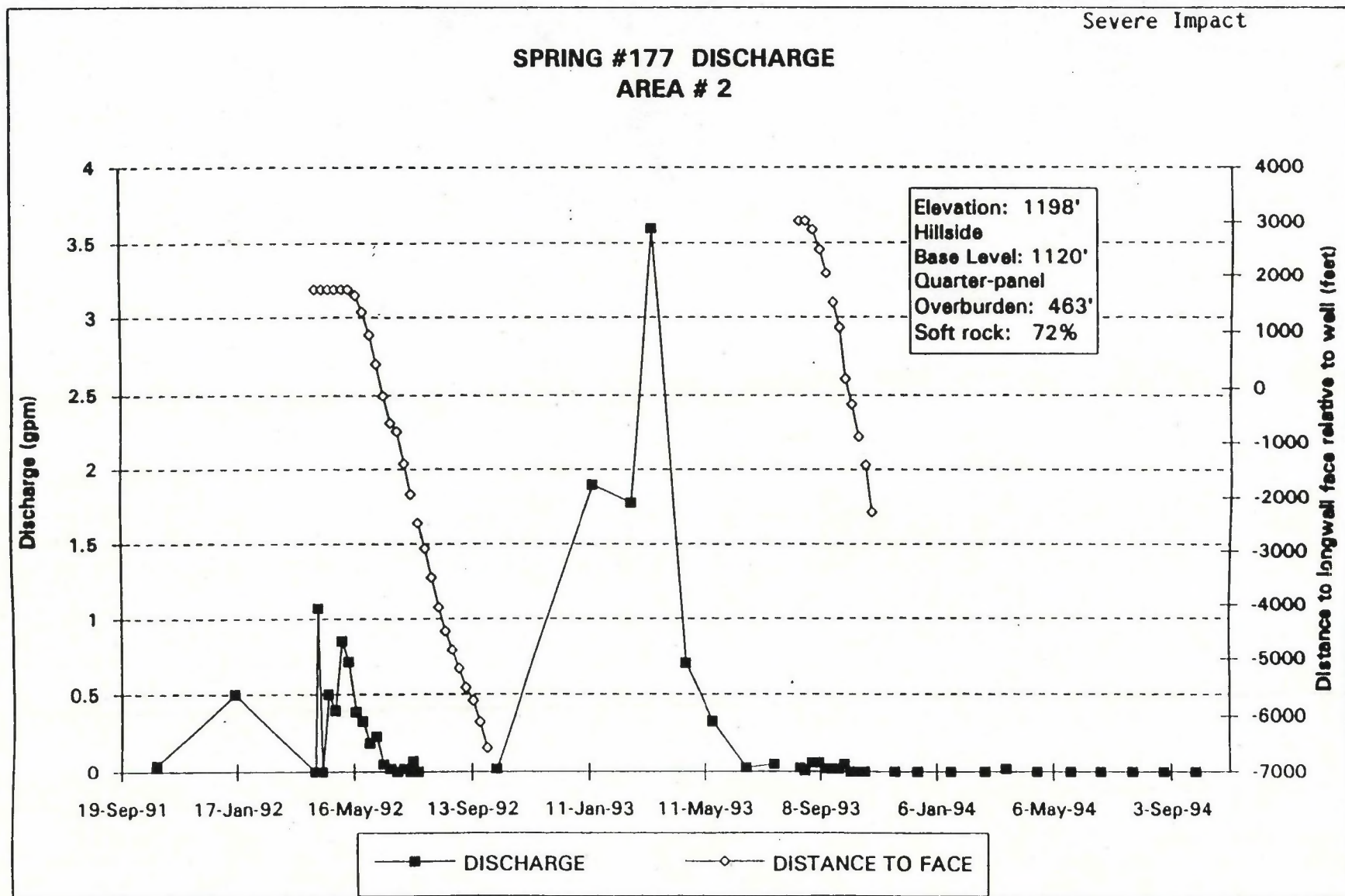
ORIGINAL
D0360-7



Prepared by: Moody and Assoc., Inc. 4/13/97

ORIGINAL

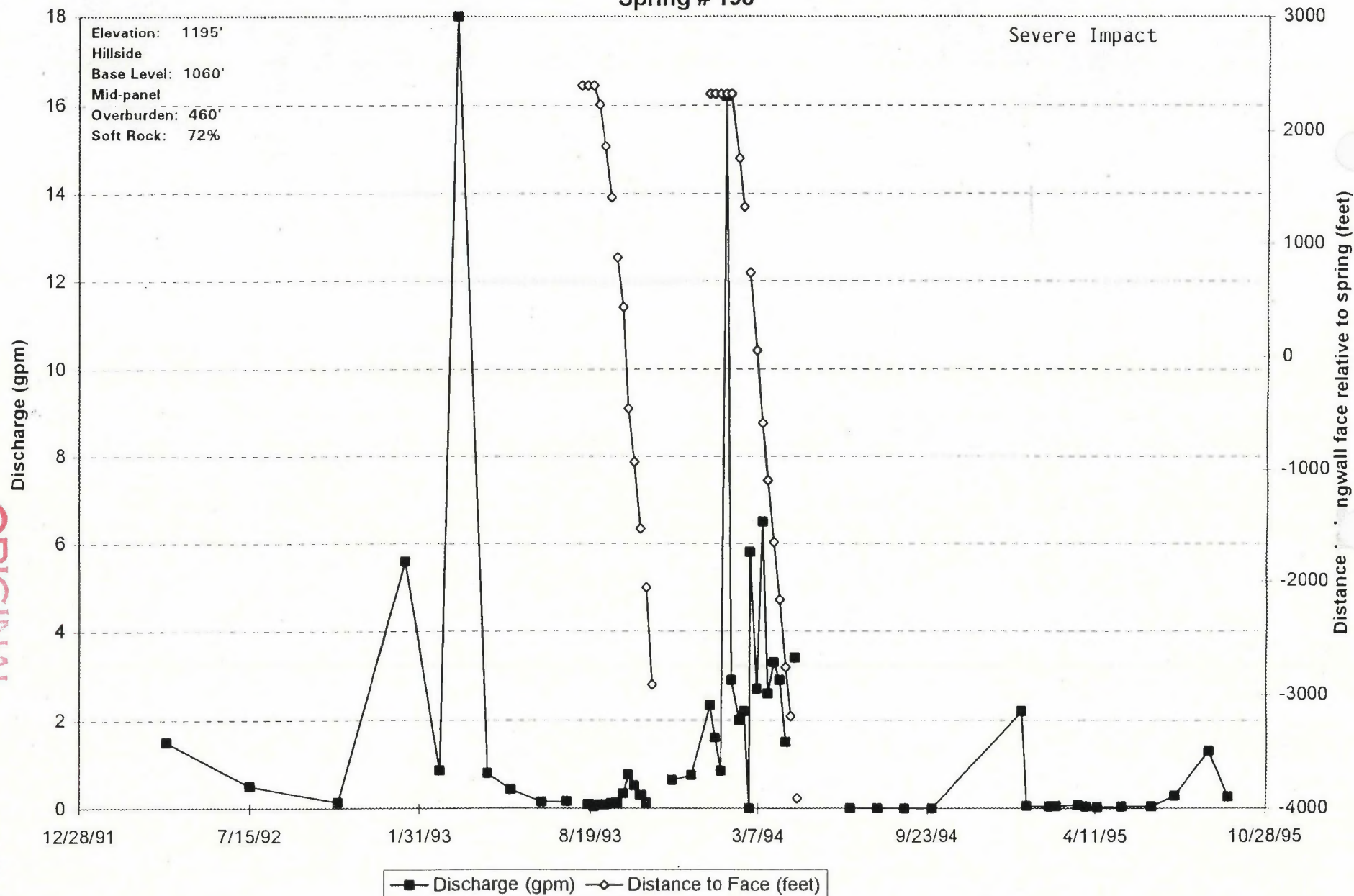
D0360-7



Spring # 198

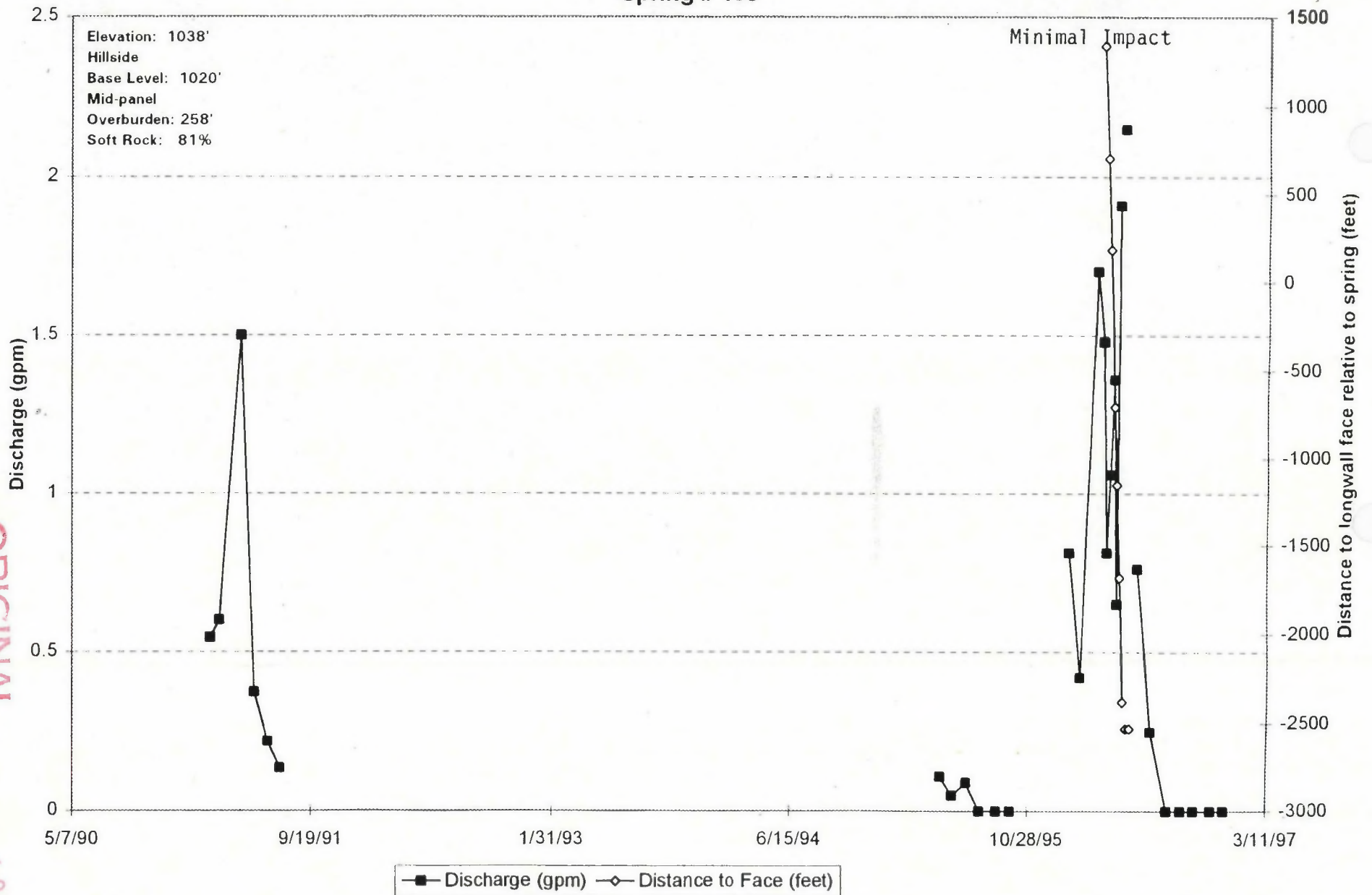
Severe Impact

Elevation: 1195'
Hillside
Base Level: 1060'
Mid-panel
Overburden: 460'
Soft Rock: 72%



Spring # 199

Elevation: 1038'
Hillside
Base Level: 1020'
Mid-panel
Overburden: 258'
Soft Rock: 81%



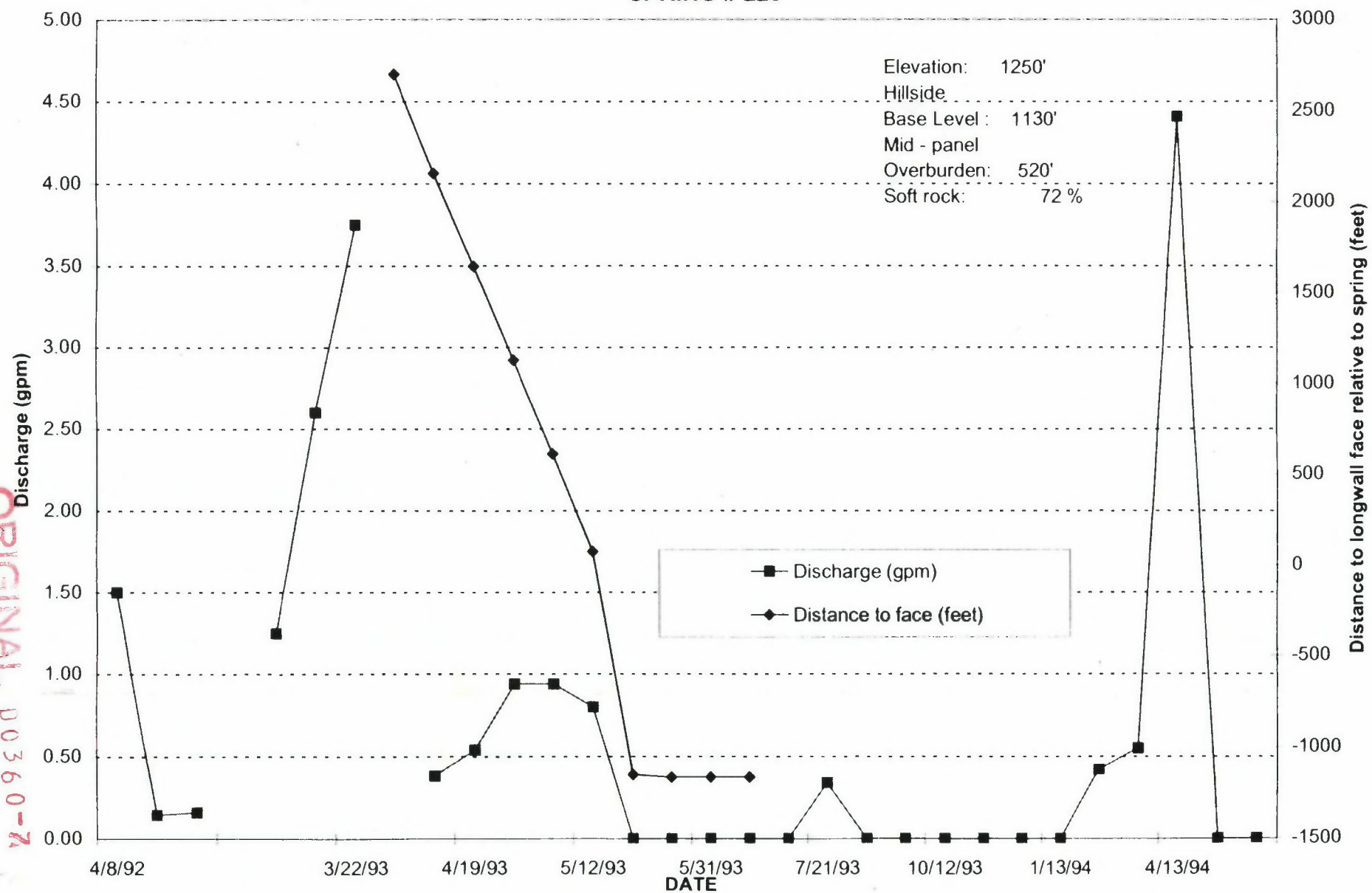
Prepared by: Moody and Assoc., Inc. 4/13/97

TOVCC 21564

ORIGINAL

D0360-7

SPRING # 226



APPENDIX C

Stream Hydrographs - Application Area D-0360-3

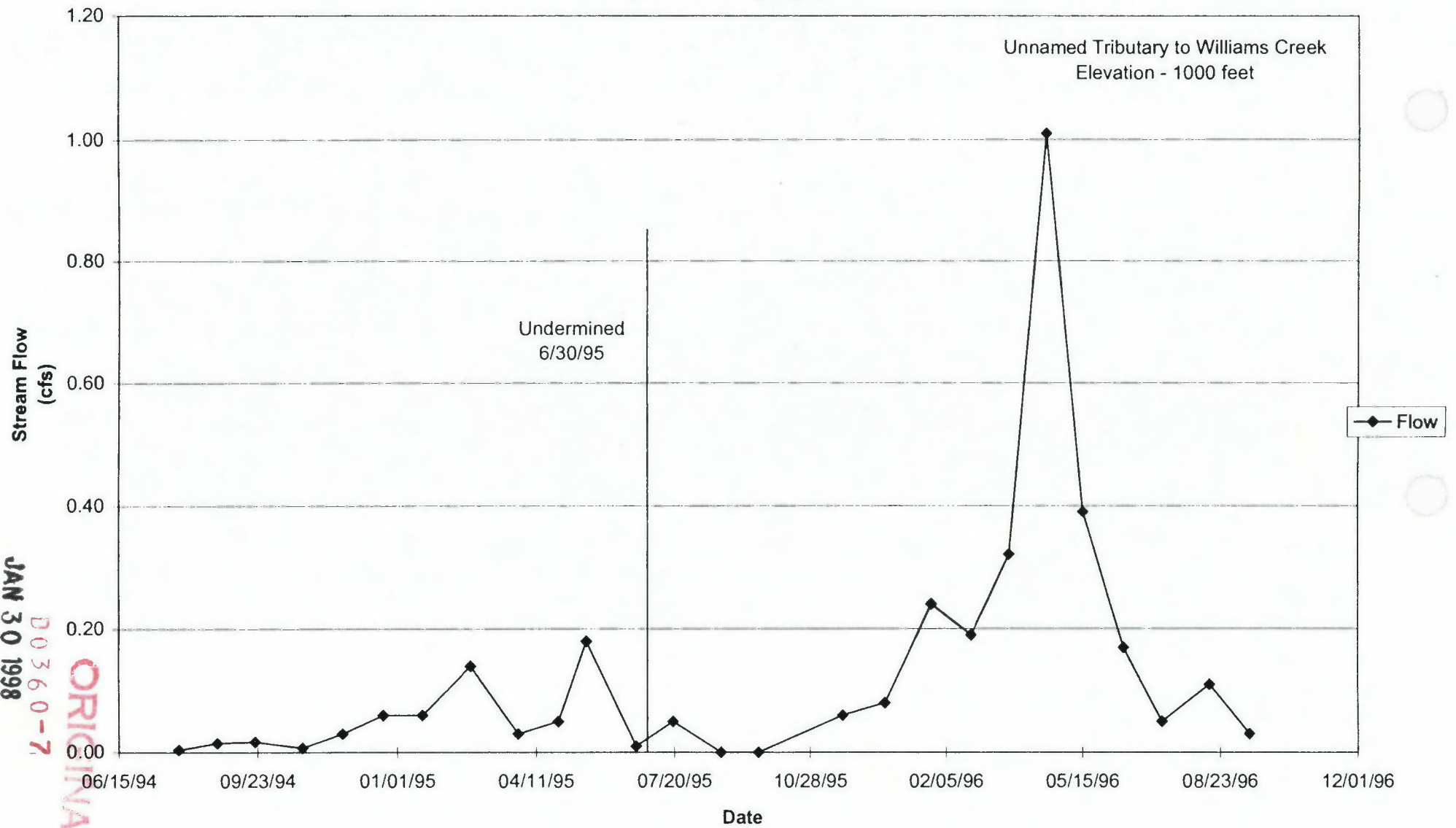
D0360-7

ORIGINAL

JAN 30 1998

Ohio Valley Coal Company
Application Area D - 0360 - 7

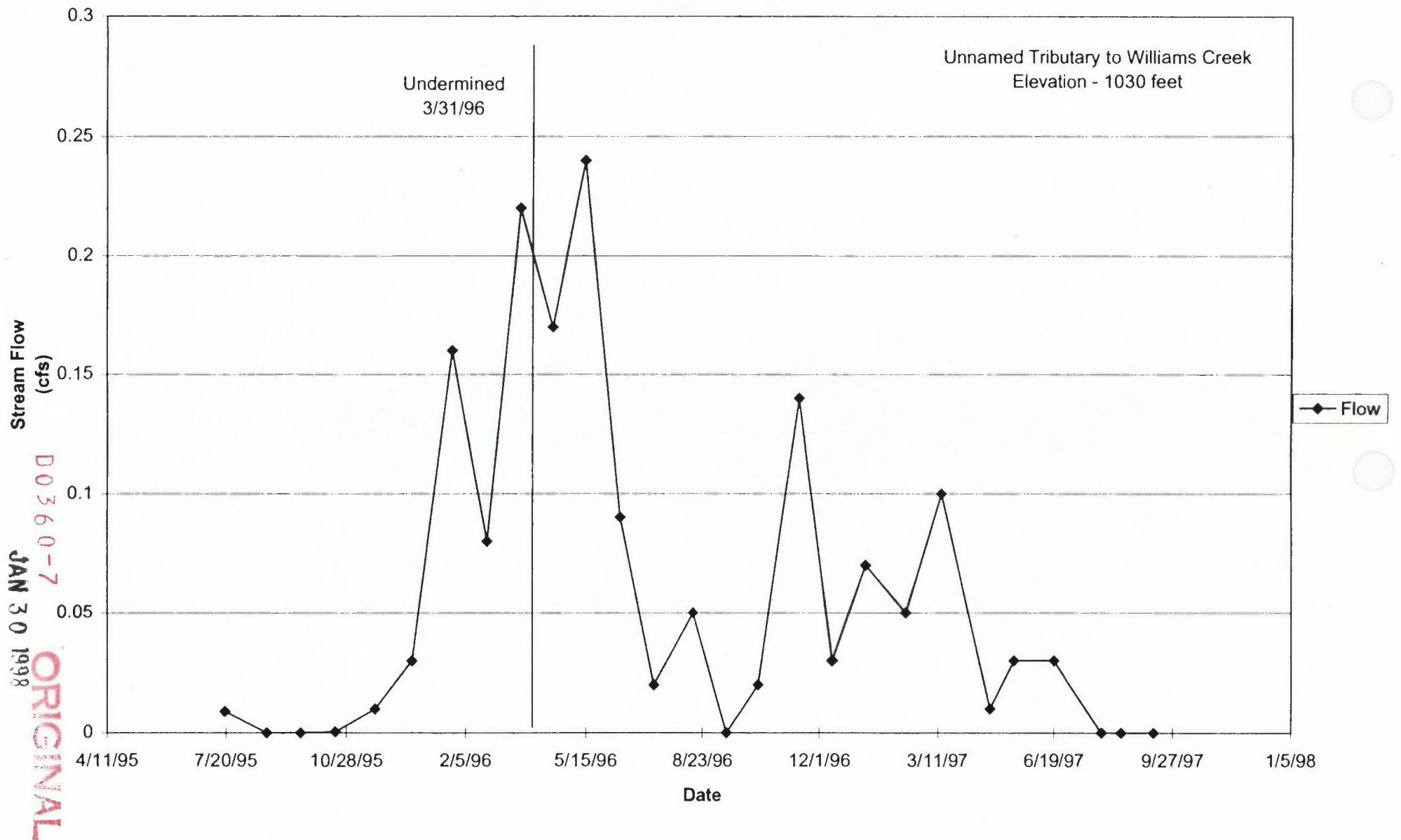
Upstream Monitoring Point
U 34 - 067
Stream Flow Hydrograph



JAN 30 1998
D 0360-7
ORIGINAL

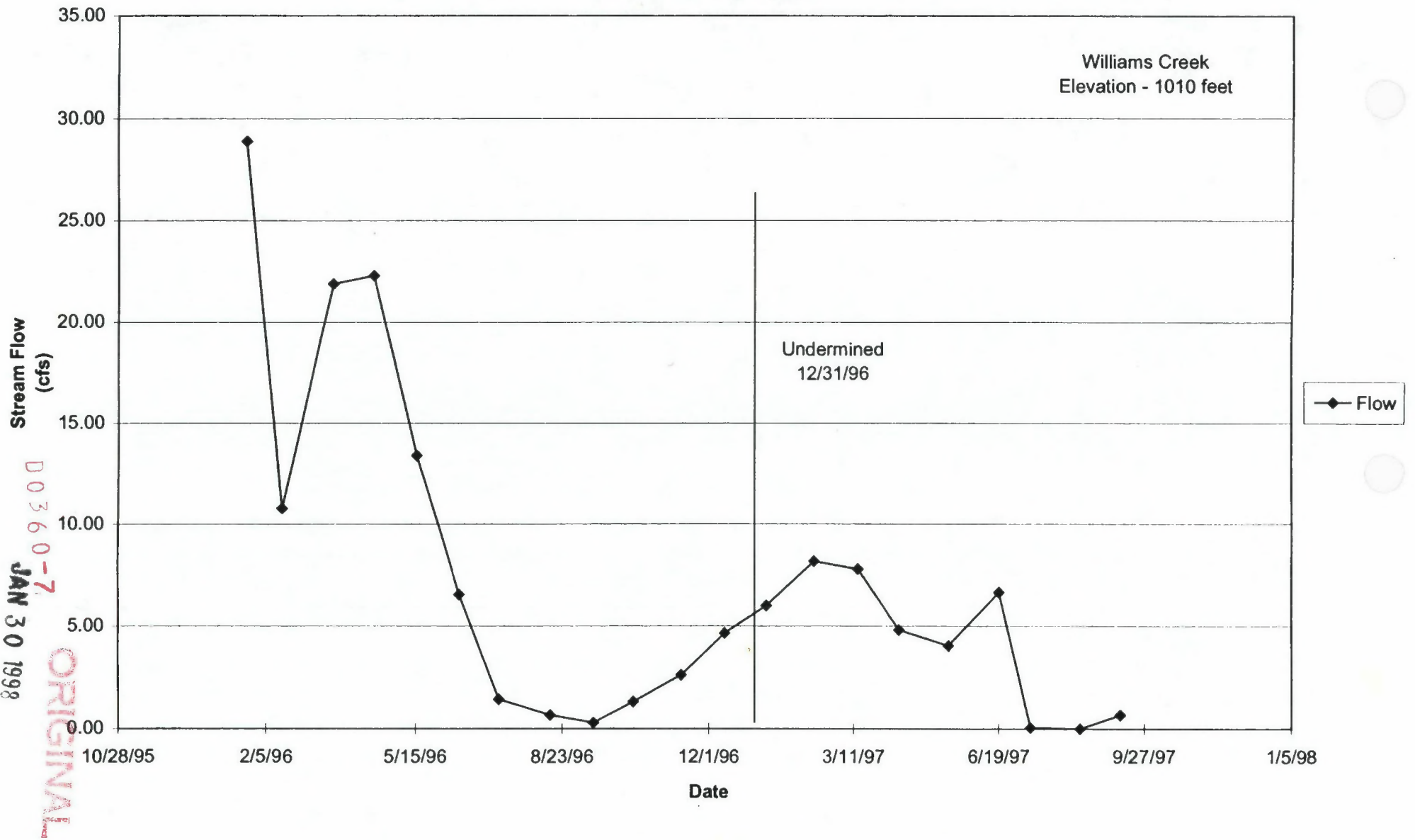
Ohio Valley Coal Company
Application Area D - 0360 - 7

Upstream Monitoring Point
U 034-144
Stream Flow Hydrograph



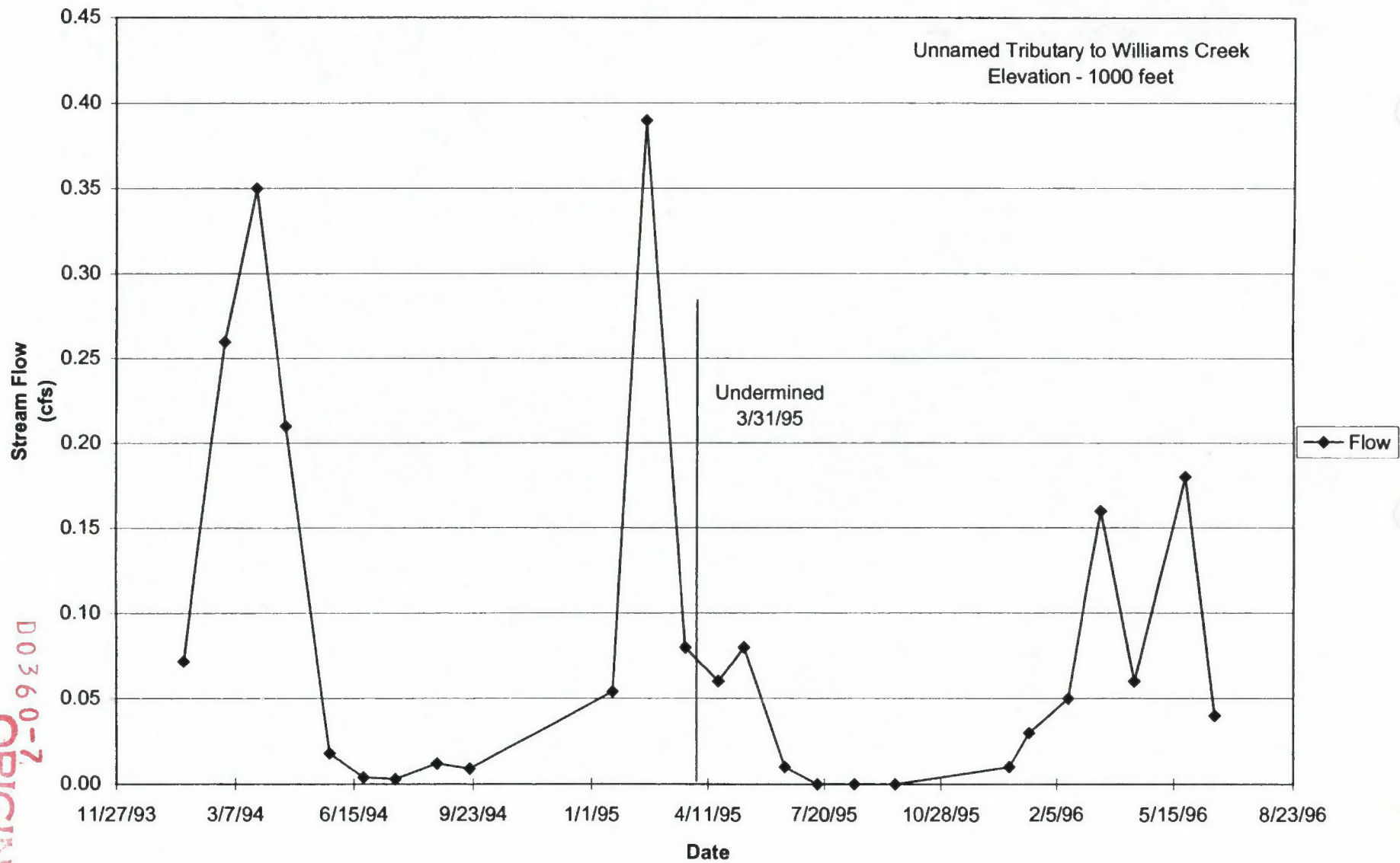
Ohio Valley Coal Company
Application Area D - 0360 - 7

Upstream Monitoring Point
U34 - 038
Stream Flow Hydrograph



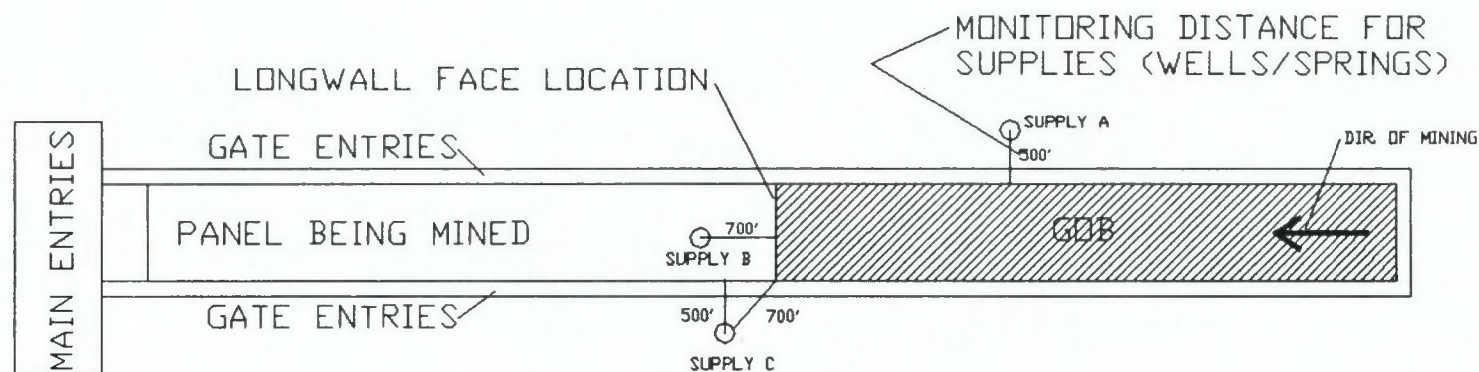
Ohio Valley Coal Company
Application Area D - 0360 -7

Upstream Monitoring Point
U 29 - C
Steam Flow Hydrograph



JAN 30 1998
D0360-7
ORIGINAL

FIGURE 1
THE OHIO VALLEY COAL COMPANY
SKETCH SHOWING THE RELATIONSHIP OF
WATER SUPPLIES WITH THE BOUNDARY OF THE LONGWALL
PANEL AND THE ADVANCING LONGWALL FACE



SUPPLY A IS 500' FROM THE PANEL EDGE OUTSIDE THE PANEL.
SUPPLY B IS 700' FROM THE ADVANCING LONGWALL FACE DIRECTLY AHEAD.
SUPPLY C IS 500' FROM THE PANEL EDGE AND 700' FROM THE ADVANCING FACE.

DISTANCES TO FACE AT WHICH IMPACTS
WERE OBSERVED ARE LISTED
IN TABLE 5 OF THIS
PROBABLE HYDROLOGIC CONSEQUENCES STATEMENT

0360-7

JAN 30 1998

ORIGINAL

TABLE A

Addendum to Page 18, Part 2, F(1)

Ohio Valley Coal Company
Application Area D - 0360 - 7

Well Data and Predicted Hydrologic Impacts Summary

Well	Elevation (feet)	Well Depth (feet)	Bottom Elevation (feet)	Coal Elevation (feet)	Overburden Depth well bottom to coal (feet)	Aquifer See Attachment 14C	Percent Soft Rocks	Topographic Position	Panel Position	Distance To Nearest Panel Edge (feet)	Use	Predicted Hydrologic Impact		
												Minimal	Moderate	Severe
W 167	1090	96	994	765	229	D	50	Hillside	Outside	850	Domestic	No impact expected; >700' to mining		
WL 168	1112	62	1050	775	275	C	52	Valley Bottom	Outside	350	Domestic	41%	11%	48%
DW 169	1112	25	1087	775	312	A	52	Valley Bottom	Outside	350	Domestic	41%	11%	48%
DW 173	1166	25	1141	765	376	A	51	Hillside	Quarter	300	Domestic	41%	11%	48%
WL 177	1183	71	1112	780	332	C	51	Hilltop	Quarter	200	Domestic	41%	11%	48%
DW 178	1225	44	1181	785	396	A	75	Hilltop	Outside	600	Domestic	41%	11%	48%
W 294	1125	57	1068	775	293	C	52	Hillside	Outside	200	Domestic	41%	11%	48%
WL 317	1303	90	1213	780	433	B	74	Hilltop	Quarter	200	Domestic	41%	11%	48%
DW 318	1304	18	1286	775	511	A	74	Hilltop	Outside	800	Domestic	No impact expected; >700' to mining		
W 323	1138	120	1018	775	243	D	52	Hillside	Outside	300	Domestic	41%	11%	48%
W 374	1290	51	1239	805	434	B	81	Hilltop	Outside	900	Domestic	No impact expected; >700' to mining		
W 375	1247	Unk	Unk	790	Unk	Unk	77	Hillside	Middle	300	Domestic	41%	11%	48%
DW 376	1250	30	1220	800	420	A	77	Hillside	Middle	400	Domestic	41%	11%	48%
W 377	1282	86	1196	800	396	B	77	Hilltop	Middle	350	Domestic	41%	11%	48%
W 378	1325	68	1257	805	452	B	77	Hilltop	Quarter	200	Domestic	41%	11%	48%
W 379	1323	120	1203	805	398	B	77	Hilltop	Gate	Edge	Domestic	41%	11%	48%
W 380	1350	80	1270	820	450	B	77	Hilltop	Quarter	200	Domestic	41%	11%	48%
WL 381	1325	112	1213	805	408	B	77	Hilltop	Quarter	150	Domestic	41%	11%	48%
W 382	1350	155	1195	820	375	B	77	Hilltop	Quarter	100	Domestic	41%	11%	48%

TABLE A
Page 1 of 2

TABLE A

Addendum to Page 18, Part 2, F(1)

Ohio Valley Coal Company
Application Area D - 0360 - 7

Well Data and Predicted Hydrologic Impacts Summary

Well	Elevation (feet)	Well Depth (feet)	Bottom Elevation (feet)	Coal Elevation (feet)	Overburden Depth well bottom to coal (feet)	Aquifer See Attachment 14C	Percent Soft Rocks	Topographic Position	Panel Position	Distance To Nearest Panel Edge (feet)	Use	Predicted Hydrologic Impact		
												Minimal	Moderate	Severe
W 383	1362	125	1237	815	422	B	77	Hilltop	Quarter	100	Domestic	41%	11%	48%
W 384	1335	80	1255	815	440	B	77	Hilltop	Quarter	350	Domestic	41%	11%	48%
W 385	1363	100	1263	815	448	B	77	Hilltop	Quarter	175	Domestic	41%	11%	48%
W 386	1350	Unk	Unk	830	Unk	Unk	49	Hilltop	Gate	25	Domestic	41%	11%	48%
DW 387	1260	24	1236	840	396	A	49	Hilltop	Middle	375	Domestic	41%	11%	48%
W 388	1160	Unk	Unk	845	Unk	Unk	49	Hilltop	Outside	300	Domestic	41%	11%	48%
W 389	1145	Unk	Unk	845	Unk	Unk	49	Hilltop	Outside	550	Domestic	41%	11%	48%
W 390	1030	66	964	850	114	D	49	Hillside	Outside	900	Domestic	No impact expected; >700' to mining		
DW 391	1120	30	1090	840	250	A	49	Hilltop	Outside	175	Domestic	41%	11%	48%
WL 392	1325	74	1251	815	436	B	77	Hilltop	Quarter	150	Domestic	41%	11%	48%
DW 393	1330	30	1300	815	485	A	77	Hilltop	Quarter	50	Domestic	41%	11%	48%
W 394	1259	80	1179	820	359	B	77	Hilltop	Middle	250	Domestic	41%	11%	48%
W 396	1305	70	1235	785	450	B	81	Hilltop	Outside	500	Domestic	41%	11%	48%
W 397	1310	51	1259	780	479	B	81	Hilltop	Outside	750	Domestic	No impact expected; >700' to mining		
W 401	1318	113	1205	800	405	B	81	Hilltop	Middle	225	Domestic	41%	11%	48%
W 402	1325	119	1206	830	376	B	79	Hilltop	Outside	600	Domestic	41%	11%	48%
W 404	1130	52	1078	835	243	D	79	Hillside	Middle	400	Domestic	41%	11%	48%
DW 408	1305	33	1272	780	492	A	81	Hilltop	Gate	50	Domestic	41%	11%	48%
W 417	1165	90	1075	835	240	D	79	Hillside	Middle	300 50	Domestic	41%	11%	48%

TABLE A
Page 2 of 2

↑
Q
per Dave Bartel
on 4/14/98

TABLE B

Addendum to Page 18, Part 2, F(1)

Ohio Valley Coal Company
Application Area D - 0360 - 7**Spring and Pond Data
and
Predicted Hydrologic Impacts Summary**

Spring	Surface Elevation (feet)	Coal Elevation (feet)	Overburden Thickness (feet)	Aquifer See Attachment 14C	Percent Soft Rocks	Topographic Position	Panel Position	Distance to Nearest Panel (feet)	Use	Predicted Hydrologic Impact		
										Minimal	Moderate	Severe
DS 111	1120	770	350	C	52	Hillside	Outside	1100	Domestic	No impact expected; >700' to mining		
DS 226 A	1163	770	393	B	51	Hillside	Quarter	200	Livestock	6%	3%	91%
DS 240	1170	780	390	B	74	Hillside	Middle	300	Domestic/ Livestock	6%	3%	91%
DS 241	1190	780	410	C	52	Hillside	Quarter	200	Domestic/ Livestock	6%	3%	91%
DS 242	1103	785	318	C	52	Valley Bottom	Gate	70	Livestock	6%	3%	91%
DS 244	1290	775	515	B	81	Hilltop	Outside	900	Livestock	No impact expected; >700' to mining		
DS 265	1200	800	400	B	75	Valley Bottom	Gate	50	Livestock	6%	3%	91%
DS 267	1225	810	415	B	75	Hillside	Gate	50	Livestock	6%	3%	91%
DS 268	1180	790	390	C	75	Hillside	Quarter	100	Livestock	6%	3%	91%
DS 269	1220	800	420	B	75	Hillside	Quarter	75	Livestock	6%	3%	91%

TABLE B
Page 1 of 2

TABLE B

Addendum to Page 18, Part 2, F(1)

Ohio Valley Coal Company
Application Area D - 0360 - 7**Spring and Pond Data
and
Predicted Hydrologic Impacts Summary**

Spring	Surface Elevation	Coal Elevation	Overburden Thickness	Aquifer See Attachment 14C	Percent Soft Rocks	Topographic Position	Panel Position	Distance to Nearest Panel	Use	Predicted Hydrologic Impact		
										Minimal	Moderate	Severe
DS 270	1260	800	460	B	75	Hillside	Middle	350	Domestic	6%	3%	91%
DS 271	1323	815	508	B	77	Hilltop	Quarter	250	Livestock	6%	3%	91%
DS 272	1258	815	443	B	77	Hilltop	Quarter	200	Domestic	6%	3%	91%
DS 277	1264	780	484	B	81	Hilltop	Outside	575	Livestock	6%	3%	91%
DS 278	1230	780	450	B	81	Hillside	Outside	850	Livestock	No impact expected; >700' to mining		
DS 282	1268	780	488	B	81	Hilltop	Outside	200	Livestock	6%	3%	91%
DS 283	1263	790	473	B	81	Hillside	Quarter	200	Livestock	6%	3%	91%
DS 285	1190	800	390	B	81	Hillside	Outside	900	Domestic	No impact expected; >700' to mining		
P 2	1190	795	395	NA	75	Hillside	Quarter	100	Livestock	No impact expected		
P 15	1175	795	380	NA	75	Hillside	Quarter	110	Livestock	No impact expected		
P 16	1250	800	450	NA	78	Hillside	Gate	Edge	Livestock	No impact expected		
P 17	1330	800	530	NA	78	Hilltop	Middle	225	Livestock	No impact expected		
P 18	1250	805	445	NA	78	Valley Bottom	Quarter	100	Livestock	No impact expected		

TABLE B
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ADDENDUM TO PAGE 30, PART 3, K(5)(e)
THE OHIO VALLEY COAL COMPANY
POWHATAN NO. 6 MINE
PERMIT D-0360

MITIGATING MEASURES

Damage to Public Roads

OVCC will notify the appropriate road authority at least six months prior to undermining the road. In the event that roadways are permanently damaged by subsidence, OVCC, at the request of the road authority, will pay to repair the road surface to its pre-mining condition.

Damage to Public Roads

~~OVCC will notify the appropriate road authority at least six months prior to undermining the road. In the event that roadways are permanently damaged by subsidence, OVCC, at the request of the road authority, will pay to repair the road surface to its pre-mining condition.~~

XB 5-15-98

Damage to Public Water Lines

OVCC will notify the owner of public water lines at least six months prior to undermining the lines. In the event that the pipelines are damaged by subsidence, OVCC, at the request of the public water line authority, will pay to repair the pipeline to its pre-mining conditions.

Damage to Other Utility Lines

OVCC will notify the owner of other utility lines (electric lines and sub-stations) at least six months prior to undermining the lines to allow the utility to take measures that they deem necessary and proper to protect their property and the public health and safety.

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THE OHIO VALLEY COAL COMPANY
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MEASURES TO BE TAKEN TO MITIGATE OR REPAIR DAMAGE TO
SUBSTATIONS

The Ohio Valley Coal Company has prior existing rights to this property, therefore it is the responsibility of South Central Power to maintain their facility. However, we will notify them of the progress of our longwall as the time of subsidence nears enabling them to take measures necessary to maintain service to their customers in much the same way as we have done with the East Ohio Gas Company's transmission lines. Ohio Valley will notify South Central Power Company at least six months prior to undermining their substation.

No significant damage is anticipated for this facility. Cracks in slabs of concrete if they occur, can be filled with grout. Tilted frames or transformers can be shimmed to re-level them, if necessary. This work will be done by South Central Power Company.

Measures that South Central Power Company may take to mitigate damage to their substation include but not necessarily be limited to relieving tension on the transmission lines, monitor the frame structures for stress/tilt, support the transformers on platforms that can be leveled as subsidence occurs, and trench around the structures. Other measures may be employed as needed by the South Central Power Company.

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THE OHIO VALLEY COAL COMPANY
POWHATAN NO. 6 MINE
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ALTERNATIVE WATER SUPPLY INFORMATION

Adjacent Areas Above Full Recovery Mining

The PHC contained in this application indicate a potential for diminution and/or interruption of ground water supplies in areas above and contiguous to full recovery mining operations. However, no contamination of such water supplies is expected.

Notwithstanding its mining rights and without waiving any of its mining rights, where such diminution or interruption results from full recovery mining, The Ohio Valley Coal Company will repair or install a replacement source in the adjacent area at its own expense in a manner mutually satisfactory to OVCC, the water user, and the Division of Mines and Reclamation, and to a level sufficient to meet the water user's pre-mining quantity and quality levels which will be determined by monitoring information gathered in accordance with the Monitoring Plan. While it will be the policy of OVCC to replace a water source, payment of water bills will be the responsibility of the water user, unless otherwise agreed upon by OVCC and the water user.

Past experience indicates that the majority of subsidence (that detectable with surveying equipment) is complete within about 45 days after the longwall passes under the area. Water losses generally occur within that time period.

The steps which OVCC would take to repair or replace affected water sources in the adjacent area include:

1. Repair damaged cisterns after OVCC has determined that subsidence is complete;
2. On a site specific basis, re-drill existing wells, drill new wells, or connect the water user to public water supplies (if no public water supply exists, OVCC may install a line of sufficient size to service those affected by OVCC's mining operation);
3. On a site specific basis, developed springs will be replaced by a farm pond built according to accepted engineering practices, drilling of a new well, development of another spring in close proximity to the original spring, or connect the water user to public water supplies (if no public water supply exists, OVCC may install a line of sufficient size to service those affected by OVCC's mining operation);

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PAGE TWO

4. Repair damaged farm ponds so as to be comparable to their pre-mining conditions;
5. Install an interim water supply until affected water supplies are replaced. Interim supplies may include hauled water or a tap to public water. OVCC will only install temporary, replacement water using a public water supply if it can be connected within 48 hours. OVCC routinely uses the local fire department to haul county water for temporary replacement supplies. This practice is expected to continue. The local fire department can haul water within a matter of hours after receiving a request. Temporary tanks and water troughs for livestock are kept in stock to facilitate quick installations. Payment of interim water bills shall be the responsibility of the water user unless otherwise agreed upon by OVCC and the water user.
6. Such other proven, cost effective, and reasonable techniques as OVCC may now, or in the future, deem appropriate.

It is OVCC's intention to bear the cost of the installation only of both interim and permanent replacement of developed water sources being used at the time of undermining. If contamination, diminution, or interruption of a water user's ground or surface water supply used for domestic use occurs as a proximate result of the mine's operation, OVCC will repair such water supply or install a replacement supply at OVCC's expense. OVCC will not be responsible for non-developed sources or developed sources not being used at the time of undermining. ~~A source is considered to be developed if it has been fully developed (i.e., water delivery system and drinking facilities) and is well maintained such that it is usable at the time of undermining.~~ *DJB 5-15-98*

OVCC will install, at OVCC's expense, an alternate water supply system (within 48 hours) to be used until repair or replacement is completed or will reimburse the water user for the reasonable cost of obtaining a water supply from the date of any such contamination, diminution, or interruption until the supply is repaired or replaced. In cases where temporary water cannot be provided within 48 hours, OVCC will immediately notify the Chief of the Division of Mines and Reclamation who will determine if the circumstances warrant an extension of the 48 hours.

OVCC will provide the affected water user with no less of an available water supply than the water user had before mining, based on the pre-mining measurements. If required, OVCC will notify the Division of Mines and Reclamation immediately after it has been informed of the loss of developed water (ground or surface water) due to its mining activities.

As previously stated, the elevation of alternative water sources is unpredictable until the water system in the area again attains equilibrium after mining. Therefore, the alternative water supplies to be developed will be identified when the need arises.

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PAGE THREE

Those supplies may include but not be limited to re-development of an existing well, spring, or pond, or replacement of the source with the County Water System. The County Water System has been contacted by OVCC and has assured us that there is capacity to replace each developed source with county water. A letter to that effect is enclosed.

If a water user believes that his or her underground or surface water source which is used for domestic use has been contaminated, diminished, or interrupted as a proximate result of the mine's operation, he or she should notify OVCC by calling (614) 926-1351. OVCC will make a determination of liability no later than sixty (60) days after notification of the contamination, diminution, or interruption of a water supply as a proximate result of the mine's operation.

Work on installing a temporary alternate water supply will be complete within 48 hours (unless an extension of the 48 hour time frame is granted by the Chief) after OVCC learns of the contamination, diminution, or interruption to a domestic-use water supply proximately caused by the mining operation. OVCC will pay for installation costs only for a temporary, alternate water supply. Permanent repair or the installation of a replacement water supply for an affected water supply shall be completed no later than eighteen (18) months after it has been determined that the supply has been contaminated, diminished, or interrupted as a proximate result of the mine's operation. The costs of repair of the original water supply and/or the installation of a replacement supply system to provide the affected water user with no less of an available water supply than was being used before mining, based on the pre-mining measurements, shall be paid for by OVCC. If the water user opts to do so, he may install his own temporary water supply system. OVCC will reimburse the water user for the costs of installing a temporary water supply system. Payment for domestic water will be the responsibility of the water user unless otherwise agreed upon by OVCC and the water user.

In repairing or replacing a water user's ground or surface water supply system used for domestic use which is damaged as a proximate result of the mine's operation, OVCC's first preference is to repair the affected supply system. If that is neither effective nor feasible, OVCC's second preference is to replace the affected supply system with a like supply system. For example, a damaged pond, if not repairable, would be replaced with a new pond. If that is not feasible, OVCC will replace the affected supply system with a similar supply system. For example, a damaged dug well, if not repairable or replaceable with another dug well, would be replaced by a potable-type cistern, a drilled well or a similar supply system.

It should be recognized that property sites differ in such elements as geologic and hydrologic composition. Thus, the determination of whether repair of an affected water supply system is feasible or whether replacement by a specific type of water supply system is feasible must be made on a case-by-case, site specific basis by OVCC. OVCC, in the past, has always attempted to consult and negotiate with the affected water user concerning the selection of the type of water replacement system and its site. This is done at the request of water users who prefer this procedure to that of OVCC making unilateral decisions about replacement supplies and sites. However, OVCC, if required by the Division of Mines and Reclamation, will make these decisions unilaterally.

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PAGE FOUR

In some cases, OVCC reaches pre-subsidence agreements with water users, who are normally represented by counsel and in all cases have full opportunity to consult with counsel or anyone else of their choosing. These agreements, which are typically negotiated by OVCC employees, normally cover all potential damage claims. In situations where such an agreement is reached, OVCC will comply with the water replacement terms contained in the agreement. Such an agreement will satisfy, at a minimum, this permit and ORC 1513.162.

In any situation where OVCC determines that the contamination, diminution, or interruption of a water supply was not proximately caused by the mining operation, based on evidence such as the proximity of the supply to the mining operation, site specific geologic and surface conditions, or climatological conditions, OVCC will provide the Division of Mines and Reclamation with notice of its determination and the proof in support of that determination to allow the Division of Mines and Reclamation to issue a Chief's Order deciding the issue. This Chief's Order is then appealable in accordance with O.R.C. §1513.13. The water user's water supply system will continue in operation during the time OVCC seeks review of this matter pursuant to O.R.C. §1513.13. If it is determined that contamination, diminution, or interruption of a supply is the proximate result of the mine's operation, OVCC shall bear the costs of installing temporary water system. OVCC reserves the right to proceed against the water user to recover costs incurred if it is determined that OVCC is not liable for the contamination, diminution, or interruption of the affected water supply.

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Belmont County
COMMISSIONERS

Anita Wiley
John Pollock
Michael Bianconi


DIRECTOR
David Grum

BELMONT COUNTY SANITARY SEWER DISTRICT

P. O. BOX 457
ST. CLAIRSVILLE, OHIO 43950
Phone: (614) 695-3144
Fax: (614) 695-3411



TO: Dave Bartsch

FROM: David Grum, Director 

DATE: April 3, 1997

SUBJECT: Water System Capacity

Per your request concerning the water supply the District has available for your proposed areas including, Sections 22, 23, 24, 28, 29, 30, 34, 35 and 36, Smith Township, would be ample to properly serve, as you have outlined. However, a hydrological and engineering study may be necessary in order to provide the necessary pressure and volume of water to portions of the area in question.

We will be happy to work with you in developing a water system plant for the area to meet the needs of residents.

DG:jm

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ADDENDUM TO PAGE 25, PART 2, A(14)(a) AND PAGE 27, PART 2, D(8)
THE OHIO VALLEY COAL COMPANY
POWHATAN NO. 6 MINE
PERMIT D-0360

Refuse from Area to be Mined

The refuse from the area to be mined will be disposed of according to the plans previously submitted and approved in the original submittal of Permit D-0360 (on file at the Division of Mines and Reclamation Office). In particular, see Addendum 20 and Appendix IV-9.

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ADDENDUM TO PAGE 26, PART 3, E(1-3)
THE OHIO VALLEY COAL COMPANY
POWHATAN NO. 6 MINE
PERMIT D-0360

RECLAMATION PLAN - PROTECTION OF HYDROLOGIC BALANCE

The hydrologic balance is expected to change minimally as a result of the proposed longwall mining operation in the long term. Temporarily, the depth below the surface of ground water will increase as a result of increasing the number of cracks in the local rock units. The static level of the ground water should re-establish itself, usually at a lower elevation, within 18 months to 2 years after mining. At that time, ground water will be available in quantity at least as great as before mining. Because of increased porosity due to the cracking caused by longwall mining, the quantity of ground water that is available to users will probably increase. Minor surface cracking over longwall areas will eventually heal or be repaired, causing the ground to capture approximately the same percentage of rainfall as before. It is anticipated that stream flow in selected sections of first order streams where overburden thickness exceeds 200 ft may be temporarily reduced over relatively short stream segments. This impact is anticipated due to the fact that the headwaters of streams occasionally relocate to lower elevations following subsidence that results in the dewatering of hillside/hilltop springs. The monitoring data obtained for the ground and surface water sources over the longwall areas at the Powhatan No. 6 Mine indicate there will be no lasting deleterious effects of the longwall mining on water quality. Therefore, the hydrologic balance outside the permit area will be protected.

The rights of present users of surface and ground water will be maintained through the water replacement plan found in the Addendum to Page 18, Part 2, F(2). It is anticipated that within two years, ground water will re-establish itself so that wells and springs can be replaced. Surface water drainage is not expected to be impacted seriously by longwall mining.

Acid or toxic drainage are not expected to be a problem at the Powhatan No. 6 Mine. The No. 8 seam is entirely below drainage, and the openings to the surface are located high enough above the seam that they will not experience hydraulic pressure from the seam. The major watersheds of this area, Captina and McMahon Creeks, are at the elevation of the mining for the application area at a distance of over 5 miles from the mine. Acid or toxic drainage is not expected to enter the waters of the State.

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ADDENDUM TO PAGE 26, F(3)
THE OHIO VALLEY COAL COMPANY
POWHATAN NO. 6 MINE
PERMIT 0360

GROUND AND SURFACE WATER MONITORING

Ground water and surface water monitoring as previously proposed for Powhatan No. 6 Mine will continue with respect to the surface operations. Ground water and surface water monitoring over longwall areas of the underground operations is proposed to determine the impacts of underground mining on these areas. The proposed plan presented below is to be used in lieu of all previously proposed and existing plans for such areas.

Intermittent and perennial streams originating within the mining area will be monitored where the stream leaves the area; and the streams crossing through the mining area will be monitored both upstream and downstream of the area currently being mined.

Ground water monitoring will consist of sampling all developed water sources, with the permission of the landowner, in the following manner:

1. Monthly monitoring will be done for quantity (static water level/flow) for a one year period before and after mining for developed springs, wells, and stream monitoring points. This information will be reported quarterly but is available at the OVCC office.
2. Quarterly monitoring will be conducted for quality for a one year period before and after mining for developed springs, wells, and stream monitoring points. This information will be reported quarterly.
3. Daily precipitation data from the mining area will be submitted to evaluate its impact on spring and stream flow. This information will be submitted quarterly but will be available at the OVCC office.

An attempt will be made to sample as outlined above, however, some sources may not be accessible should a landowner deny permission to sample, a well may be buried, etc.. These locations, if encountered, will be documented in the quarterly reports.

All samples will be taken as outlined to the extent that existing well construction allows. Any samples that are unobtainable will be documented as such in the quarterly report. Sampling will include analyses for nitrates.

OVCC will monitor all developed supplies in accordance with the monitoring plan outlined above regardless of the aquifers and/or saturated zones that they access. All developed supplies have

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PAGE TWO

been identified and have been indicated on the Application Map. All wells, both drilled and dug have been identified. Developed springs, consisting of a french drain and catchment basin, have been shown. A map will be included in the quarterly monitoring report showing the location of the wells, streams, and springs monitored and their position relative to the active mining areas of OVCC.

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GROUND WATER AND SURFACE WATER MONITORING PLANS

1. Ground Water Monitoring Plan

All legitimately developed, used ground water supplies will be monitored quarterly for quality and monthly for quantity for at least one year prior to full recovery mining, and at least one year subsequent to mining unless access is denied by the land owner. This monitoring will include wells and springs used for domestic purposes. Weekly quantity monitoring will be conducted whenever the longwall face is within three weeks of undermining the supply and no less than three weekly pre-mining and post-mining measurements will be made. Ground water supplies located within 500 feet (measured horizontally) of the perimeter of the active longwall panel will be monitored as if they were located on the panel. Monitoring will be continued for at least one year subsequent to full recovery mining contingent upon review by the Division of Mines and Reclamation. Daily precipitation data will be submitted quarterly to evaluate spring flow.

2. Surface Water Monitoring Plan

Various surface water locations depicted on the application/hydrology map will be sampled monthly for flow and quarterly for quality. The quality requirements of OAC 1501:13-3-14(F)(2) and the other QMR parameters as stated on the QMR report sheets will apply to the surface water analysis. Each surface monitoring station will be monitored for at least one year prior to full coal recovery mining. Monitoring will be continued for at least one year subsequent to full recovery mining contingent upon review by the Division of Mines and Reclamation. Daily precipitation data will be submitted quarterly to evaluate stream flow.

With each quarterly monitoring report of ground and surface water, a map depicting the progression of the longwall face will be attached to indicate the sampling points in the full recovery areas. Notes will be submitted indicating the position relative to the longwall face, with "+" indicating the station is in advance of the face and a "-" indicating a position behind the face. An attempt will be made to monitor and sample as outlined above, however, some sources may not be accessible. These locations, if encountered, will be documented in the quarterly reports. All samples will be taken as outlined to the extent that existing well construction allows. Any samples that are unobtainable will be documented as such in the quarterly report. Quarterly sampling will include analysis for nitrates.

OVCC will monitor all ground and surface locations in accordance with the quarterly monitoring plan outlined above regardless of the saturated zones that they access. All developed supplies have been identified and have been indicated on the application/hydrology map.

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ADDENDUM TO PART 3, PAGE 28, (K)(1)
THE OHIO VALLEY COAL COMPANY
POWHATAN NO. 6 MINE
PERMIT D-0360

ANNUAL MAP

In accordance with PPD Underground 91-1, a mine map will be submitted to coincide with the permit anniversary date. For ground water monitoring, the face location of the active panel will be provided quarterly with the monitoring data. The maps will contain the following:

1. Scale the same as the Division of Mines submittal, or 1 in. = 500 ft.
2. All base map requirements pursuant to ORC 4153.03.
3. Surface owner names and property lines.
4. Streams and other bodies of water.
5. Section lines and numbers.
6. Buildings and other surface structures.
7. Public roads and railroad tracks.
8. Mine openings and surveyed workings, showing pillar and entry size, configuration and location.
9. Survey extension dates for all workings, including longwall face or pillar recovery lines.
10. Areas of full extraction.
11. Coal elevations and extraction height.
12. Completion dates for individual sections (if sealed, date and location of seal).
13. Maximum extraction ratios for completed sections.
14. Ground water and subsidence monitoring stations.
15. The boundaries of the authorized mining area.
16. The location and extent of any other mine excavation (surface or underground) within the same seam being mined.
17. A map title block and notarized map certification.

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ADDENDUM TO PART 3, PAGE 29, (K)(4)
THE OHIO VALLEY COAL COMPANY
POWHATAN NO. 6 MINE
PERMIT D-0360

ENGINEERING PROPERTIES FOR MAIN DEVELOPMENT ENTRIES

The main development entries provide access for air and haulage to the longwall mining sections, and thus are part of the longwall mining system. No room-and-pillar mining is planned for this application area. Where main development entries are planned, the maximum overburden is 465 ft. and the average is 338 ft. The projected maximum extraction ratio is 50 percent for areas beneath surface structures plus 15 ft. plus a 30 degree angle of draw (see Fig. 1). Main entries are to be driven a maximum of 20 ft. wide with cross cut centers projected to be 65 ft x 65 ft.

The structural contour map with this application indicates the coal elevation (bottom) in the application area to be 765 to 845 ft. (msl). Table 13 shows typical compressive strengths for the immediate floor in the application area. The floor primarily consists of shale or calcareous shale, with an occasional thin bed of claystone. The compressive strength of the shale is 5,034 to 9,453 psi and for the calcareous shale, 9,444 to 12,590 psi. These shale units frequently contain limestone nodules, which makes excavating the mine floor particularly difficult and costly.

The compressive strength of the coal is generally accepted to be 4,330±600 psi. The strength of the Pittsburgh (No. 8) coal in this area was determined by Professor Charles Holland years ago with the use of 3 in. cube specimens. The design strength was found to be 4330 psi. Professor Holland and others have found that, due to the cleavage planes and other natural seam defects, the in-situ compressive strength for a 6½ ft. seam is 850 psi.

There will be no measures taken on the surface to prevent damage or lessening of the value or reasonably foreseeable use of the surface since extraction ratios will be low. No surface damage is anticipated.

Pillars have been designed with minimum safety factors of 1.3 for butt sections. In mains, a minimum safety factor of 2.0 is used. The following data was used to design the pillars in the application area:

Coal Constant	7,500
Coal specimen size	3 in. cube
Anticipated Maximum Mining Height	6.5 ft.
Worst case safety factor	
Mains	2.0
Butts	1.3
Maximum Depth	600 ft.

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ENGINEERING AND MINING TECHNIQUES

The Powhatan No. 6 Mine is an operation that uses the longwall method of mining. The engineering and mining techniques for longwall mining are as follows:

Longwall Mining

1. Longwall mining removes long panels of coal that are 600 to 900 ft. and a maximum of approximately 15,000 ft. long. A longwall shearer, a double-drum machine, removes the panel by cutting slices of coal along the width of the face. The roof is temporarily supported by hydraulic supports called shields. The shields are moved forward each time that a slice is cut from the face. The coal is transported from the face by an armored, chain conveyor.

The roof behind the shields is allowed to collapse. Surface subsidence on the order of approximately 66 percent of the mining height occurs when the roof falls.

2. The longwall face is outlined by three or four entries on each side called gate entries, on the end where the panel starts by several entries called bleeder entries, and on the panel end by the main entries or by recovery rooms (entries developed to remove the longwall mining equipment). These entries are developed using a continuous miner, shuttle cars, and roof bolters. Pillars and concrete block stoppings separate each entry from the next. These entries provide ventilation and belt haulage for the longwall mining section, with a maximum recovery of less than 50 percent of the coal. Coal pillars between the longwall panels crush after both adjacent longwall panels are extracted. Subsidence of the surface occurs over these panels and pillars during longwall mining as a result of the pillars crushing and from the extraction of both adjacent longwall panels.

Main Entry Development - Longwall Access

There will be one set of main entries driven in a general north-south direction. The main entries consist of approximately seven entries, driven with continuous miners and are primarily used for ventilation, transportation of men and materials, and haulage. These entries are designed for long-life with the pillars providing roof support. The maximum recovery factor for mains and submains is below 50 percent and is much less if one considers the barrier blocks left in place at the approaches to butt and longwall sections.

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ADDENDUM TO PAGE 29, PART 3, K(5)(a)
THE OHIO VALLEY COAL COMPANY
POWHATAN NO. 6 MINE
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ANTICIPATED EFFECTS OF PLANNED SUBSIDENCE

General

The anticipated surface effects of subsidence during and following coal extraction by the longwall method at the Powhatan No. 6 Mine are related to the following movements of the ground surface:

1. Vertical subsidence
2. Horizontal movement

The combination of vertical and horizontal movements of points on the ground surface leads to tensile (or extension) and compression strains from curvature of the ground surface and tilt. Extension and compression of the ground surface, in the direction of the movement of the longwall face, occur as the face moves in the direction of mining. The extension and compression effects develop after passage of the longwall face. The surface curvature, with resulting extension and compression, and the tilt near the ends of a mined panel and along the sides of a mined panel, represent the permanent effects of subsidence.

There are temporary effects of subsidence from what is known as the dynamic subsidence wave. This wave begins about five days prior to undermining. As the surface begins to subside, the land goes into tension. Tension cracks result on the land surface in some locations (depending on the soil type and topography). Immediately after undermining, the land begins to subside rapidly and goes into compression. Generally, the magnitude of the compressive forces do not reach the magnitude of the tensile forces, and some cracks remain open until the weather (usually rain) fills them. These temporary effects pass very quickly due to the speed of the longwall mining at the Powhatan No. 6 Mine.

Background

The dip of the coal is 40 ft. per mile at South 35 Degrees East. The strike is North 55 Degrees East. The panel dimensions are approximately 600 to 900 ft. wide and up to 15,000 ft. long. The gates are approximately 140 to 200 ft. wide between panels (typically 156 ft). The coal thickness to be extracted is approximately 64 in. throughout most of the application area. There is approximately 25.22 to 60.93 percent of the overburden classified as hard rock according to the test hole data.

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Time of Subsidence

The surface effects of mining occur at times generally related to the advance of the longwall face.

1. Movements which develop over a panel being mined with passage of the face: these represent the most significant movements, start soon after the face passes, and are generally complete within thirteen (13) days of passage of the face. Approximately 99 percent of the subsidence is complete when the face is located at a distance equal to the depth of cover from any point on the surface.
2. Movements which occur over a previously mined panel as an adjacent panel is mined: such super-incumbent movements are relatively insignificant, being in the range of about 0.2 ft at the center of the previously mined panel. Such movement at this location is caused by the collapse of the pillars between the two panels and the subsequent subsidence. Therefore, it is evident that the gate entries are part of the full coal recovery mining method.
3. Movements over a long period of time due to consolidation of the gob and time dependent stress readjustment: long-term subsidence of the ground surface is not measurable, and is insufficient to cause surface damage.

Predicted Movements

The surface movements indicated below are derived from measurements made during subsidence over OVCC's first longwall panel (5 West) and over the 10 West and 11 West panels. Similar movements are anticipated within the application area.

Monitoring Over First Longwall Panel (5 West)

In February, 1990, the first longwall panel progressed beneath Smith Township Road 116. The Ohio Valley Coal Company placed subsidence monuments at 25 and 50 foot intervals along the road, measured their elevations prior to mining, and on several occasions after the mining was past the road. Figure 1 shows the plan view of the subsidence monuments. The longwall gate section entries are shown on the figure also. Figure 2 shows the subsidence profile that developed. Table 1 shows the monitoring data. The longwall face was 600 ft wide (center-to-center), at a depth of 497 ft, and had a mining height of 5.2 ft (62 in).

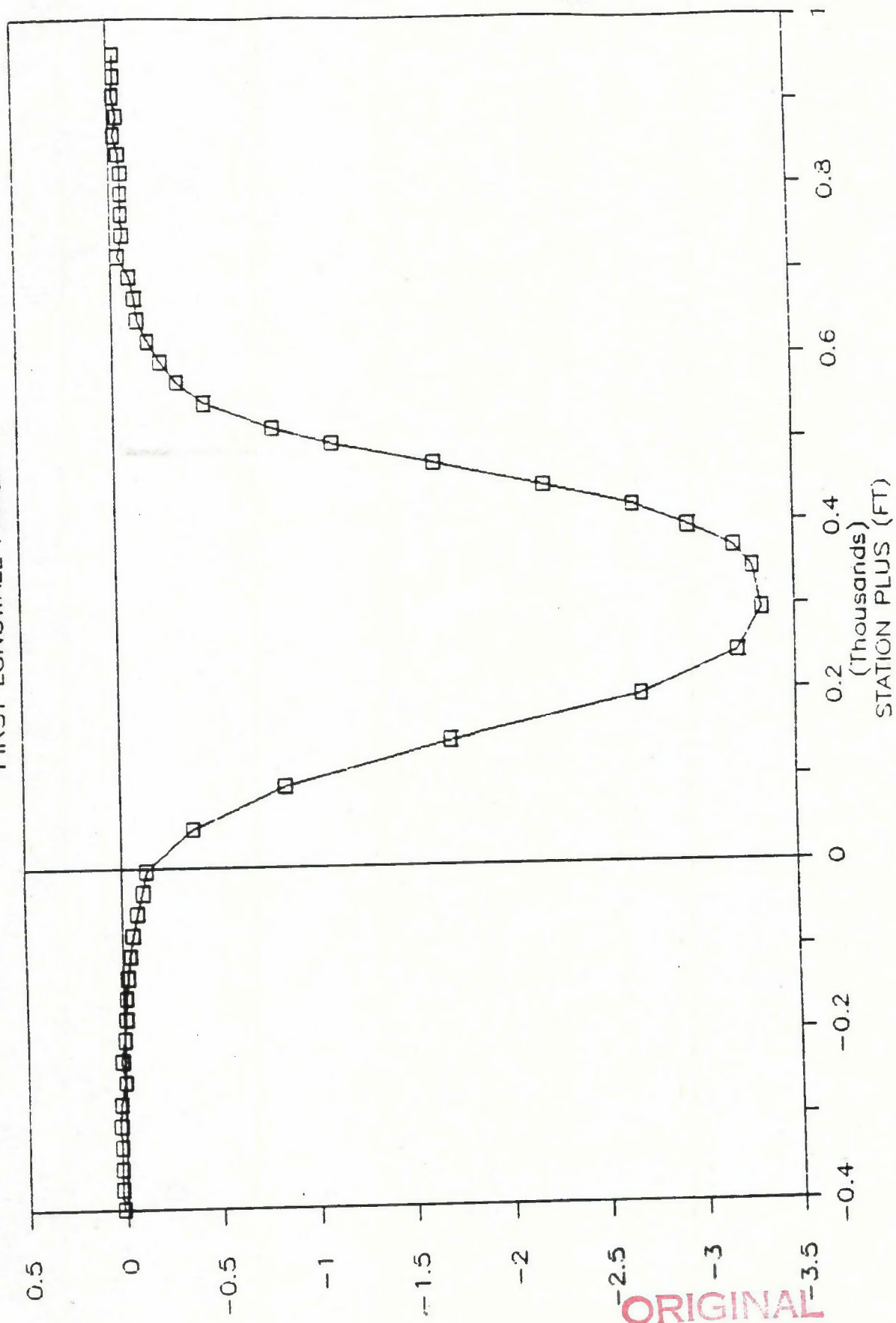
^{maximum displacement}
The angle of draw (measured to .02 ft of displacement) was approximately 13 degrees. The angle of draw on the headgate side was identical to the angle on the tailgate side. It should be noted that the surface at the headgate showed signs of some horizontal movement that caused the monuments on the surface to move downhill. This situation caused some of the displacement of the monuments

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FIGURE 2
SUBSIDENCE PROFILE

FIRST LONGWALL PANEL



ELEVATION DIFFERENCE FROM ORIGINAL (FT)

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TABLE 1

SUBSIDENCE DATA COLLECTED OVER "FIRST" PANEL

LOCATION IN PANEL	SUBSIDENCE STATION	STATION PLUS	AVERAGE SINCE 03-05-90
*****	*****	*****	*****
	1	-399.88	0.02
	2	-376.10	0.02
	3	-352.31	0.02
	4	-327.81	0.02
	5	-302.74	0.03
	6	-277.67	0.02
	7	-252.91	0.00
	8	-228.06	0.02
	9	-203.22	0.00
	10	-178.02	-0.01
	11	-152.98	-0.01
	12	-128.17	-0.02
	13	-103.76	-0.04
	14	-79.23	-0.05
	15	-53.91	-0.08
	16	-29.53	-0.11
T. G.	17	-4.67	-0.13
	18	44.98	-0.37
	19	94.67	-0.86
	20	144.40	-1.71
	21	194.26	-2.70
	22	244.94	-3.20
CENTER	23	295.08	-3.33
	24	344.43	-3.28
	25	369.29	-3.19
	26	394.09	-2.95
	27	418.96	-2.67
	28	443.77	-2.21
	29	472.83	-1.64
	30	497.74	-1.12
	31	517.68	-0.81
	32	547.66	-0.47
	33	572.62	-0.33
H. G.	34	597.63	-0.24
	35	622.37	-0.18
	36	647.21	-0.13
	37	672.17	-0.11
	38	697.21	-0.09
	39	722.39	-0.03
	40	747.40	-0.06
	41	771.54	-0.05
	42	794.95	-0.06
	43	818.47	-0.06
	44	841.35	-0.05
	45	864.06	-0.03
	46	886.73	-0.04
	47	909.96	-0.02
	48	933.35	-0.03
	49	960.15	-0.03

Values shown in ft.
Negative value indicates
downward movement.

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TABLE 2

11. DIFFERENCE IN GROUND ELEVATIONS: First LM Panel

STATION		SURVEY DATE												AVERAGE SINCE 03-05-90
NUMBER		02-14-90	02-16-90	02-21-90	02-23-90	02-26-90	02-28-90	03-02-90	03-05-90	03-12-90	03-19-90	04-12-90	06-11-90	03-05-90
1		0.01	0.01	0.00	0.00	0.00	0.01	0.02	0.01	0.03	0.03	-0.01	0.00	0.02
2		0.00	0.02	0.01	-0.02	0.00	0.01	0.01	0.02	0.02	0.05	0.01	0.07	0.02
3		0.03	0.03	0.01	0.01	0.01	0.01	0.03	0.02	0.02	0.05	0.01	0.08	0.02
4		0.02	0.02	0.02	0.01	0.01	0.01	0.02	0.01	0.03	0.05	0.01	0.04	0.02
5		0.03	0.02	0.03	0.02	0.02	0.02	0.04	0.04	0.01	0.06	0.01	0.07	0.03
6		0.02	0.01	0.01	0.01	0.04	0.01	0.03	0.02	0.02	0.05	0.01	0.07	0.02
7		-0.03	-0.01	0.00	-0.02	-0.01	-0.00	0.01	0.00	0.00	0.03	-0.02	0.05	0.00
8		0.01	0.01	0.02	0.00	0.01	0.01	0.02	0.01	0.02	0.04	0.00	0.06	0.02
9		0.01	0.01	0.00	0.00	0.00	-0.00	0.01	-0.01	0.00	0.03	-0.01	-1.96	0.00
10		0.01	0.01	0.00	-0.01	-0.01	-0.01	-0.01	-0.01	-0.01	0.02	-0.03	0.00	-0.01
11		0.08	0.01	0.00	-0.01	0.01	-0.01	-0.01	-0.01	-0.03	0.01	-0.02	0.03	-0.01
12		0.08	0.01	-0.01	-0.02	-0.02	-0.03	-0.03	-0.03	-0.03	0.00	-0.03	0.02	-0.02
13		-0.04	0.01	-0.01	-0.02	-0.02	-0.03	-0.03	-0.03	-0.04	-0.01	-0.06	0.00	-0.04
14		0.07	0.00	-0.01	-0.04	-0.03	-0.07	-0.05	-0.06	-0.06	-0.02	-0.07	-0.01	-0.05
15		0.08	-0.01	-0.02	-0.05	-0.07	-0.08	-0.08	-0.06	-0.08	-0.06	-0.11	-0.05	-0.08
16		0.07	0.00	-0.03	-0.08	-0.09	-0.10	-0.10	-0.11	-0.11	-0.08	-0.13	-0.07	-0.11
T.G. 17		0.11	0.05	0.01	-0.06	-0.09	-0.11	-0.12	-0.13	-0.13	-0.10	-0.15	-0.09	-0.13
18		0.03	0.01	-0.06	-0.21	-0.29	-0.34	-0.35	-0.36	-0.36	-0.34	-0.43	-0.36	-0.37
19		0.08	0.02	-0.07	-0.49	-0.68	-0.81	-0.83	-0.84	-0.85	-0.83	-0.90	-0.86	-0.86
20		0.09	0.00	-0.13	-1.13	-1.47	-1.65	-1.68	-1.69	-1.71	-1.69	-1.75	-1.73	-1.71
21		0.10	-0.01	-0.18	-1.97	-2.41	-2.60	-2.65	-2.68	-2.70	-2.67	-2.74	-2.71	-2.70
22		0.08	-0.01	-0.22	-2.43	-2.90	-3.09	-3.11	-3.17	-3.22	-3.18	-3.22	-3.21	-3.20
Center 23		0.11	0.01	-0.21	-2.54	-3.01	-3.23	-3.23	-3.31	-3.36	-3.30	-3.34	-3.34	-3.33
24		0.09	0.00	-0.21	-2.48	-2.96	-3.19	-3.20	-3.28	-3.30	-3.25	-3.30	-3.30	-3.28
25		0.08	-0.01	-0.20	-2.37	-2.85	-3.08	-3.09	-3.18	-3.21	-3.15	-3.20	-3.20	-3.19
26		0.09	-0.01	-0.17	-2.13	-2.62	-2.85	-2.87	-2.93	-2.97	-2.92	-2.98	-2.97	-2.95
27		0.06	-0.03	-0.18	-1.84	-2.32	-2.56	-2.57	-2.64	-2.70	-2.63	-2.68	-2.68	-2.67
28		0.07	-0.03	-0.15	-1.41	-1.88	-2.11	-2.13	-2.20	-2.24	-2.17	-2.22	-2.22	-2.21
29		0.08	0.00	-0.06	-0.71	-1.24	-1.52	-1.53	-1.65	-1.66	-1.60	-1.66	-1.64	-1.64
30		0.09	0.00	-0.04	-0.44	-0.79	-1.02	-1.03	-1.12	-1.15	-1.08	-1.14	-1.15	-1.12
31		0.07	-0.01	-0.05	-0.33	-0.55	-0.72	-0.73	-0.81	-0.84	-0.78	-0.83	-0.82	-0.81
32		0.09	0.00	-0.04	-0.21	-0.32	-0.48	-0.58	-0.47	-0.49	-0.42	-0.48	-0.46	-0.47
33		0.08	-0.02	-0.05	-0.16	-0.24	-0.28	-0.25	-0.33	-0.36	-0.28	-0.34	-0.31	-0.33
H.G. 34		0.08	-0.02	-0.03	-0.12	-0.18	-0.19	-0.16	-0.24	-0.30	-0.19	-0.25	-0.23	-0.24
35		0.08	-0.02	-0.02	-0.08	-0.13	-0.14	-0.11	-0.18	-0.21	-0.14	-0.19	-0.16	-0.18
36		0.09	0.00	0.01	-0.06	-0.09	-0.09	-0.06	-0.14	-0.16	-0.08	-0.13	-0.11	-0.13
37		0.07	-0.01	-0.01	-0.06	-0.09	-0.08	-0.05	-0.12	-0.15	-0.07	-0.12	-0.09	-0.11
38		0.06	-0.01	-0.03	-0.05	-0.07	-0.06	-0.03	-0.10	-0.11	-0.05	-0.10	-0.07	-0.09
39		0.10	0.03	0.05	-0.01	-0.02	0.00	0.03	-0.04	-0.06	0.01	-0.04	-0.01	-0.03
40		0.08	0.01	0.03	-0.02	-0.06	-0.03	0.00	-0.07	-0.08	-0.02	-0.07		-0.04
41		0.09	0.00	0.01	-0.03	-0.05	-0.03	0.01	-0.07	-0.08	-0.01	-0.06		-0.05
42		0.10	0.00	0.01	-0.01	-0.03	-0.02	0.01	-0.07	-0.08	-0.01	-0.06	-0.02	-0.06
43		0.06	0.00	0.03	-0.02	-0.04	-0.02	0.01	-0.07	-0.09	-0.01	-0.06	-0.03	-0.06
44		0.08	-0.01	0.03	-0.02	-0.03	-0.01	0.02	-0.08	-0.08	0.01	-0.04	-0.01	-0.05
45		0.07	-0.01	0.03	-0.01	-0.01	-0.00	0.04	-0.04	-0.05	0.02	-0.03		-0.03
46		0.07	-0.01	0.02	-0.01	-0.05	-0.01	0.02	-0.05	-0.07	0.00	-0.05	-0.01	-0.04
47		0.05	0.01	0.05	-0.01	-0.02	0.00	0.03	-0.03	-0.06	0.02	-0.03	0.01	-0.02
48		0.07	-0.01	0.00	0.00	-0.02	-0.00	0.02	-0.04	-0.06	0.01	-0.03	0.01	-0.03
49		0.04	-0.02	0.03	0.00	-0.05	0.00	-2.97	-0.03	-0.07	0.01	-0.03	0.01	-0.03

Distance LM face is from road (in feet):

-430

-748

+58

+253

+340

+516

+678

+809

- sign means West of road + sign means East of road

Values shown in ft.

Negative value indicates

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ADDENDUM TO PAGE 29, PART 3, K(5)(a)
PAGE THREE

to the north of the angle of draw. However, with the surveying instruments that were used, an accuracy of 0.02 ft. was used, and the displacement north of the angle of draw was minimal.

The longwall panel passed under the road on February 20, 1990. The first subsidence was observed on February 21, with 99 percent of the maximum subsidence occurring by March 5, 1990 (within 13 days).

The second longwall panel was initially instrumented and the pre-mining elevations were determined. Subsequent measurements were not made, and a search for the monuments revealed that most of the monuments could not be found. However, measurements of the monuments over the first panel showed that the ground had experienced displacements as far south as the middle of the first panel. It was attributed to the collapse of the pillars between the panels, although some movement probably occurred in a downhill direction.

The maximum subsidence occurred near the center of the panel being mined and was measured at approximately 64 percent of the extracted seam thickness. Normally, this represents about 40 in. of subsidence.

Monitoring Over Sixth (10 West) and Seventh (11 West) Panels

State Route 9 south of Centerville, Ohio was targeted for the next subsidence monitoring program. This program monitored subsidence over two subsequent panels to further show the effect of the surface movement relative to subsequent longwall panels.

The results for the first panel mined in this set (10 West) was identical to the results for the 5 West panel, except that there were indications that subsidence occurred well into the previous panel as a result of the pillar failure and related vertical movement. Since the 9 West panel was not instrumented or monitored, the initial subsidence is not indicated over the 8 West gate entries. Graphs 1 and 2 show the time dependent subsidence during the monitoring program.

Graph 3 shows the subsidence over the common gate section when the first and second panels pass. When the second panel passes, over one ft. of subsidence occurs when the second panel subsides. If the pillars had not failed, only minor vertical movement would have occurred, similar to when the first panel passed. The angle of draw was found to be 13 degrees over the solid coal to the north of the 11 West gate entries. Subsidence again extended to the middle of the 10 West panel, thus showing the predictable nature of longwall mining subsidence. In addition, the magnitude of the subsidence over these two panels was 67 and 65 percent, nearly the same as for the 5 West panel. The data shows that longwall mining subsidence also is controlled and planned as to the location and timing of the subsidence. Graph 4 shows the longwall subsidence profile similar to the one produced for the first longwall panel (5 West).

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Generally, horizontal movement is minimal. Graph 5 shows the horizontal displacement factor (horizontal movement/vertical movement) for each of the panels. The effect of mining against the solid coal versus against the mined panel can be seen.

There were some small (less than 1 in.) surface cracks observed during the monitoring program. These occurred in the soil and in the pavement of Route 9. These cracks closed very quickly due to the compressive forces on the road pavement and to rainfall on the soil areas. No remedial work was required.

Other Observations

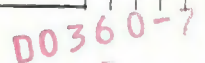
Some horizontal movement occurred in steeply sloping ground where several slips occurred. These slips were mainly in slip-prone soils. Near the center of the panel, the ground moved upwards in several small areas after subsidence as the compressive strain caused the soils to heave upward. Surface cracking up to about six inches wide occurred during the time the areas were put under tension. This surface cracking has been limited to only a few small isolated areas, where they generally closed due to compressive forces and to rainfall. Most cracks were less than 1 in. wide. Where cracks in soil were found that were wide enough to be considered hazardous, they were repaired immediately by OVCC.

Shear and twisting strains have never been observed on any structure at the Powhatan No. 6 Mine. Twisting and shearing occur when a structure is located immediately adjacent to a corner of a longwall panel within the angle of draw according to Dr. Syd S. Peng, Professor of Mining Engineering at West Virginia University. According to Dr. Peng, "If the structure is inclined to the permanent panel edge, it will be subjected to twisting and shearing resulting in damage." There have been no structures in this position to date at the No. 6 Mine.

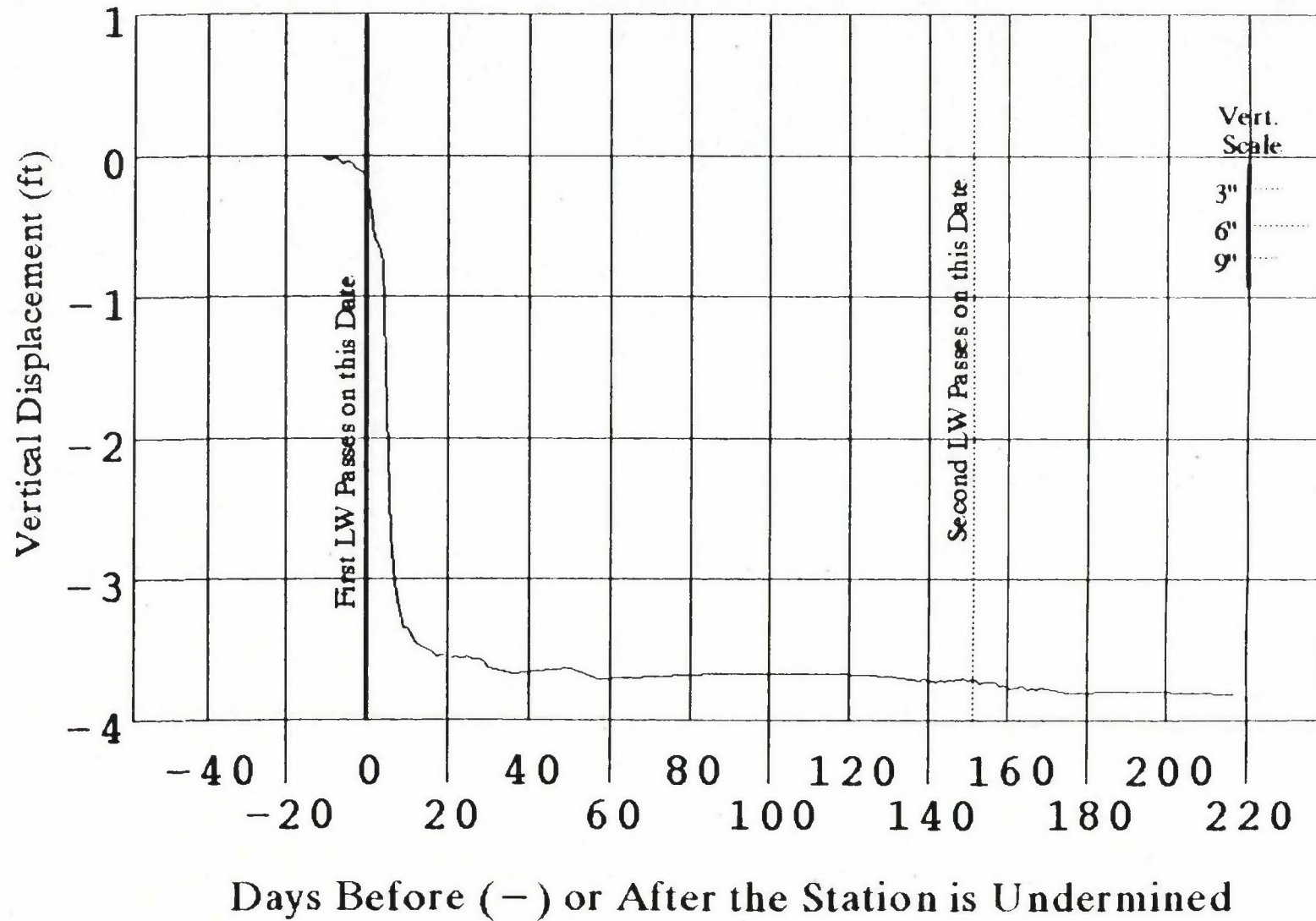
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(Scale 1" = 500')



Subsidence Profile of Station No 29 (Near Panel Center)
During Passage of LW Panels

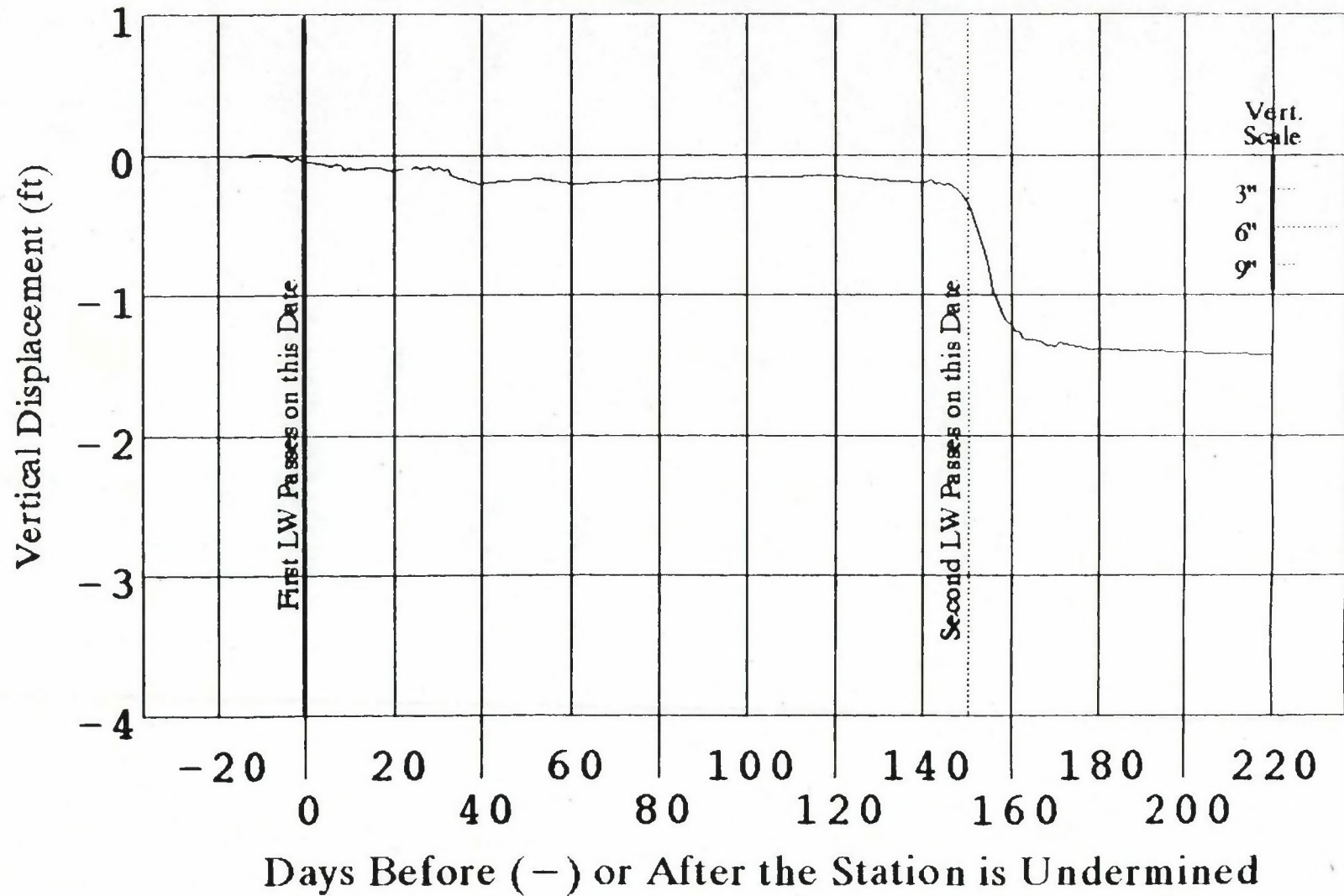


GRAPH #1

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Subsidence Profile of Station No 41 (Cmmon Gate)
During Passage of LW Panels

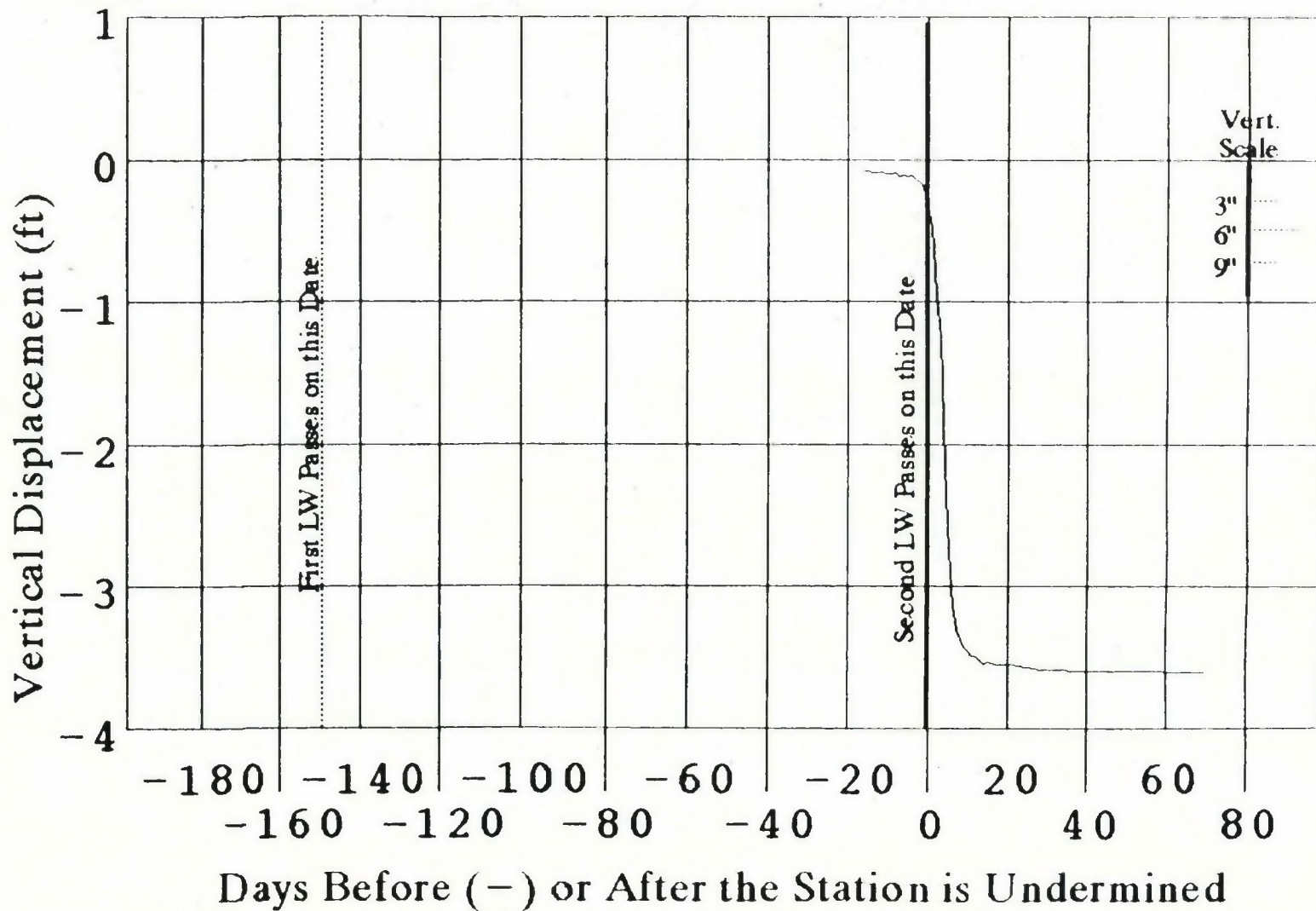


GRAPH #3

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Subsidence Profile of Station No 52 (Near Panel Center)
During Passage of LW Panels

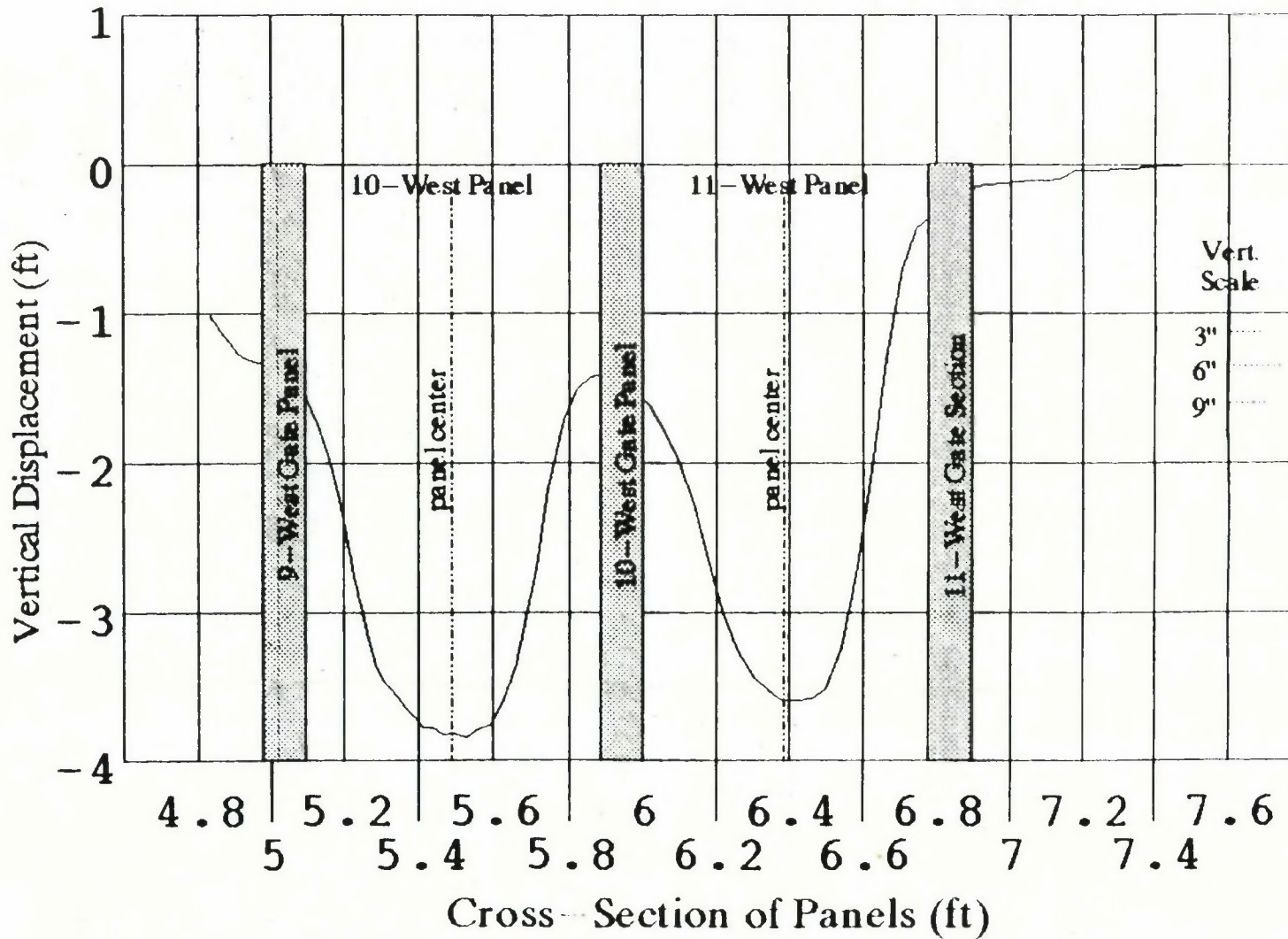


GRAPH #2

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**Subsidence Profile of the 10 – West and 11 – West LW Panels
Surface Section Across Panel Width**



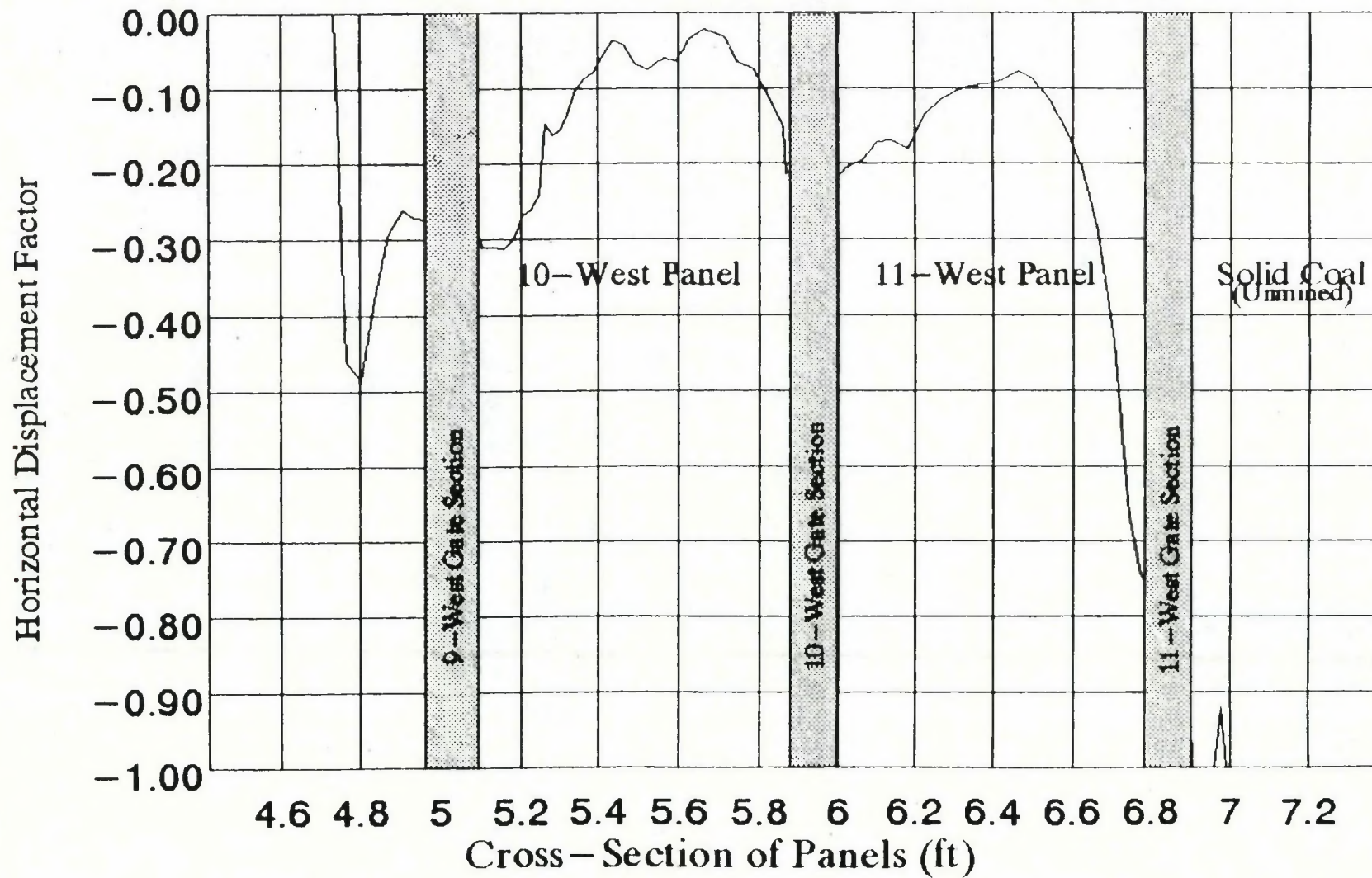
GRAPH #4

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Route 9 Subsidence Monitoring
Horizontal Displacement Factor vs Panel X-Section



GRAPH #5

THE OHIO VALLEY COAL COMPANY
SUMMARY OF SUBSIDENCE SURVEYS ALONG STATE ROUTE 9
OVER LONGWALL PANELS DESIGNATED AS 10-WEST and 11-WEST

page 1

PANEL DESIGNATION > 10-WEST (FIRST PANEL)	0	1	2	3	4	5	6	7	8	9	10
SURVEY NUMBER >	0	1	2	3	4	5	6	7	8	9	10
SURVEY DATE >	10-18-91	10-28-91	10-30-91	10-31-91	11-01-91	11-02-91	11-03-91	11-04-91	11-05-91	11-06-91	11-07-91
LONGWALL STATUS >	RUNNING	RUNNING	RUNNING	RUNNING	RUNNING	RUNNING	IDLE	RUNNING	RUNNING	RUNNING	RUNNING
DAYS AFTER 1st SURVEY >	0	10	12	13	14	15	16	17	18	19	20
FACE PLUS @ SURVEY >	3440	2842	2693	2658	2581	2500	2448	2439	2380	2288	2255
<hr/>											
STATION NUMBER >											
4	0.00	0.00	-0.03	-0.02	-0.04	-0.05	-0.03	-0.01	-0.05	-0.05	-0.01
5	0.00	0.03	-0.03	0.00	-0.02	-0.02	0.01	0.03	-0.03	-0.02	0.00
6	0.00	-0.01	-0.04	-0.02	-0.05	-0.05	-0.02	0.01	-0.04	-0.07	-0.04
7	0.00	-0.01	-0.03	-0.03	-0.04	-0.05	-0.03	-0.01	-0.05	-0.07	-0.03
8	0.00	0.01	-0.02	-0.01	-0.03	-0.04	-0.01	0.01	-0.04	-0.05	-0.03
Edge of Gob >											
9	0.00	0.01	-0.03	-0.02	-0.04	-0.05	-0.04	-0.01	-0.04	-0.07	-0.03
10	0.00	0.01	-0.03	-0.02	-0.04	-0.05	-0.07	-0.01	-0.04	-0.07	-0.03
11	0.00	0.00	-0.04	-0.03	-0.05	-0.08	-0.05	-0.01	-0.05	-0.07	-0.04
Edge of Gob >											
12	0.00	0.02	-0.03	-0.02	-0.04	-0.05	-0.05	0.00	-0.05	-0.07	-0.03
13	0.00	0.00	-0.04	-0.03	-0.05	-0.05	-0.05	-0.02	-0.07	-0.08	-0.05
14	0.00	0.00	-0.03	-0.02	-0.05	-0.05	-0.05	-0.02	-0.06	-0.08	-0.05
15	0.00	0.00	-0.04	-0.03	-0.05	-0.07	-0.04	-0.02	-0.07	-0.08	-0.05
16	0.00	0.00	-0.03	-0.03	-0.05	-0.07	-0.05	-0.02	-0.07	-0.08	-0.05
17	0.00	0.00	-0.03	-0.03	-0.05	-0.07	-0.05	-0.03	-0.07	-0.08	-0.05
18	0.00	0.00	-0.04	-0.03	-0.05	-0.08	0.18	-0.03	-0.07	-0.08	-0.05
19	0.00	0.00	-0.04	-0.03	-0.05	-0.07	-0.05	-0.02	-0.07	-0.08	-0.05
20	0.00	0.00	-0.04	-0.03	-0.04	-0.08	-0.05	-0.01	-0.07	-0.08	-0.04
21	0.00	0.00	-0.03	-0.02	-0.04	-0.05	0.57	-0.02	-0.06	-0.07	-0.04
22	0.00	0.01	-0.02	-0.01	-0.03	-0.05	-0.03	-0.01	-0.05	-0.06	-0.03
23	0.00	0.00	-0.03	-0.02	-0.04	-0.08	-0.04	-0.02	-0.07	-0.07	-0.05
24	0.00	0.01	-0.03	-0.02	-0.04	-0.05	-0.04	-0.03	-0.07	-0.07	-0.07
25	0.00	0.00	-0.03	-0.02	-0.04	-0.08	-0.05	-0.04	-0.09	-0.08	-0.08
26	0.00	0.01	-0.02	-0.01	-0.03	-0.08	-0.03	-0.04	-0.08	-0.08	-0.09
27	0.00	0.02	-0.03	-0.02	-0.04	-0.08	-0.04	-0.04	-0.08	-0.08	-0.10
28	0.00	0.00	-0.02	-0.01	-0.03	-0.08	-0.03	-0.04	-0.08	-0.08	-0.10
Near Panel Center >											
29	0.00	0.00	-0.03	-0.01	-0.03	-0.08	-0.04	-0.05	-0.09	-0.10	-0.12
30	0.00	0.00	-0.03	-0.02	-0.04	-0.08	-0.04	-0.05	-0.10	-0.11	-0.13
31	0.00	0.00	-0.03	-0.02	-0.04	-0.08	-0.04	-0.05	-0.08	-0.13	-0.15
32	0.00	-0.05	-0.08	-0.08	-0.08	-0.11	-0.10	-0.11	-0.15	-0.19	-0.22
33	0.00	0.01	-0.04	-0.02	-0.04	0.68	-0.05	-0.07	-0.10	-0.15	-0.19
34	0.00	0.00	-0.03	-0.03	-0.04	-0.08	-0.05	-0.07	-0.10	-0.15	-0.20
35	0.00	-0.01	-0.04	-0.04	-0.05	-0.07	-0.14	-0.07	-0.11	-0.16	-0.20
36	0.00	0.00	-0.03	-0.03	-0.04	-0.05	-0.05	-0.07	-0.10	-0.14	-0.18
37	0.00	0.01	-0.01	-0.02	-0.02	-0.05	-0.03	-0.04	-0.08	-0.11	-0.13
38	0.00	0.00	-0.02	-0.02	-0.03	-0.08	-0.04	-0.05	-0.08	-0.11	-0.12
39	0.00	0.01	-0.01	-0.02	-0.02	-0.04	-0.03	-0.04	-0.07	-0.08	-0.09
Edge of Gob >											
40	0.00	0.00	-0.02	0.08	-0.03	-0.05	-0.02	-0.04	-0.07	-0.07	-0.08
41	0.00	0.01	-0.01	-0.01	-0.02	-0.04	-0.02	-0.03	-0.05	-0.05	-0.05
42	0.00	0.02	0.00	-0.01	-0.01	-0.03	0.00	-0.02	-0.05	-0.03	-0.03
Edge of Gob >											
43	0.00	0.03	0.00	0.00	-0.02	-0.02	-0.01	-0.02	-0.04	-0.03	-0.01
44	0.00	0.02	0.00	-0.01	-0.01	-0.02	-0.01	-0.03	-0.03	-0.02	-0.03
45	0.00	0.03	0.01	0.00	0.00	-0.02	0.01	0.00	-0.03	-0.01	0.00
46	-	-	-	-	-	-	-	-	-	-	-
47	-	-	-	-	-	-	-	-	-	-	-
48	-	-	-	-	-	-	-	-	-	-	-
49	-	-	-	-	-	-	-	-	-	-	-
50	-	-	-	-	-	-	-	-	-	-	-
51	-	-	-	-	-	-	-	-	-	-	-
Near Panel Center >											
52	-	-	-	-	-	-	-	-	-	-	-
53	-	-	-	-	-	-	-	-	-	-	-
54	-	-	-	-	-	-	-	-	-	-	-
55	-	-	-	-	-	-	-	-	-	-	-
56	-	-	-	-	-	-	-	-	-	-	-
57	-	-	-	-	-	-	-	-	-	-	-
58	-	-	-	-	-	-	-	-	-	-	-
59	-	-	-	-	-	-	-	-	-	-	-
60	-	-	-	-	-	-	-	-	-	-	-
61	-	-	-	-	-	-	-	-	-	-	-
Edge of Gob >											
62	-	-	-	-	-	-	-	-	-	-	-
63	-	-	-	-	-	-	-	-	-	-	-
64	-	-	-	-	-	-	-	-	-	-	-
Edge of Gob >											
65	-	-	-	-	-	-	-	-	-	-	-
66	-	-	-	-	-	-	-	-	-	-	-
67	-	-	-	-	-	-	-	-	-	-	-
68	-	-	-	-	-	-	-	-	-	-	-
69	-	-	-	-	-	-	-	-	-	-	-
70	-	-	-	-	-	-	-	-	-	-	-
71	-	-	-	-	-	-	-	-	-	-	-
72	-	-	-	-	-	-	-	-	-	-	-
73	-	-	-	-	-	-	-	-	-	-	-
74	-	-	-	-	-	-	-	-	-	-	-
75	-	-	-	-	-	-	-	-	-	-	-
76	-	-	-	-	-	-	-	-	-	-	-
77	-	-	-	-	-	-	-	-	-	-	-
78	-	-	-	-	-	-	-	-	-	-	-
79	-	-	-	-	-	-	-	-	-	-	-
80	-	-	-	-	-	-	-	-	-	-	-

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THE OHIO VALLEY COAL COMPANY
SUMMARY OF SUBSIDENCE SURVEYS ALONG STATE ROUTE 9
OVER LONGWALL PANELS DESIGNATED AS 10-WEST and 11-WEST

page 2

PANEL DESIGNATION > 10-WEST (FIRST PANEL)	11	12	13	14	15	16	17	18	19	20	21
SURVEY NUMBER >	11	12	13	14	15	16	17	18	19	20	21
SURVEY DATE >	11-08-91	11-09-91	11-10-91	11-11-91	11-12-91	11-13-91	11-14-91	11-15-91	11-16-91	11-17-91	11-18-91
LONGWALL STATUS >	RUNNING	RUNNING	IDLE	RUNNING	RUNNING	RUNNING	RUNNING	RUNNING	RUNNING	IDLE	RUNNING
DAYS AFTER 1st SURVEY >	21	22	23	24	25	26	27	28	29	30	31
FACE PLUS 2 SURVEY >	2180	2128	2090	2090	2061	1980	1911	1868	1800	1754	1722

STATION NUMBER:											
4	0.00	0.01	-0.04	-0.07	0.01	-0.05	-0.01	-0.02	-0.04	-0.05	-0.03
5	0.02	0.03	-0.01	-0.03	0.02	-0.02	0.01	0.00	-0.04	-0.04	-0.01
6	-0.01	0.01	-0.05	-0.07	0.01	-0.05	-0.03	-0.03	-0.05	-0.07	-0.04
7	-0.02	-0.01	-0.04	-0.06	-0.01	-0.05	-0.02	-0.04	-0.05	-0.07	-0.06
8	0.00	0.01	-0.03	-0.05	0.00	-0.04	-0.01	-0.02	-0.05	-0.06	-0.04
Edge of Gob >											
9	0.09	0.00	-0.04	-0.05	-0.01	-0.05	-0.02	-0.02	-0.06	-0.07	-0.05
10	-0.01	-0.01	-0.04	-0.05	-0.01	-0.05	-0.02	-0.04	-0.05	-0.07	-0.05
11	-0.02	0.00	-0.05	-0.07	-0.02	-0.05	-0.03	-0.04	-0.07	-0.08	-0.06
Edge of Gob >											
12	-0.01	0.00	-0.04	-0.05	-0.01	-0.05	-0.02	-0.03	-0.06	-0.07	-0.06
13	-0.02	-0.01	-0.05	-0.07	-0.02	-0.07	-0.03	-0.05	-0.07	-0.09	-0.08
14	-0.02	-0.01	-0.05	-0.07	-0.02	-0.07	-0.03	-0.04	-0.08	-0.10	-0.10
15	-0.03	-0.02	-0.05	-0.07	-0.03	-0.07	-0.04	-0.05	-0.09	-0.12	-0.13
16	-0.03	-0.02	-0.05	-0.07	-0.03	-0.07	-0.04	-0.05	-0.10	-0.15	-0.17
17	-0.03	-0.02	-0.05	-0.08	-0.03	-0.08	-0.05	-0.07	-0.14	-0.23	-0.29
18	-0.03	-0.02	-0.05	-0.08	-0.03	-0.08	-0.05	-0.10	-0.20	-0.37	-0.48
19	-0.03	-0.03	-0.07	-0.08	-0.04	-0.08	-0.08	-0.13	-0.30	-0.59	-0.77
20	-0.03	-0.03	-0.08	-0.08	-0.03	-0.08	-0.10	-0.19	-0.49	-0.94	-1.08
21	-0.04	-0.03	-0.07	-0.12	-0.04	-0.11	-0.14	-0.30	-0.75	-1.36	-1.63
22	-0.04	-0.03	-0.07	-0.12	-0.04	-0.12	-0.21	-0.49	-1.11	-1.80	-2.03
23	-0.05	-0.05	-0.09	-0.11	-0.07	-0.18	-0.40	-0.87	-1.60	-2.24	-2.41
24	-0.07	-0.07	-0.11	-0.14	-0.10	-0.26	-0.67	-1.32	-2.08	-2.58	-2.89
25	-0.08	-0.10	-0.15	-0.18	-0.15	-0.39	-1.07	-1.81	-2.44	-2.81	-2.88
26	-0.08	-0.12	-0.20	-0.23	-0.22	-0.62	-1.58	-2.30	-2.80	-3.09	-3.12
27	-0.11	-0.17	-0.30	-0.33	-0.35	-1.01	-2.07	-2.64	-2.97	-3.18	-3.21
28	-0.13	-0.23	-0.40	-0.45	-0.51	-1.43	-2.44	-2.90	-3.13	-3.29	-3.31
Near Panel Center >											
29	-0.16	-0.33	-0.58	-0.64	-0.75	-1.82	-2.89	-3.02	-3.21	-3.34	-3.34
30	-0.20	-0.43	-0.79	-0.88	-1.02	-2.15	-2.85	-3.10	-3.24	-3.33	-3.35
31	-0.25	-0.58	-1.05	-1.15	-1.32	-2.39	-2.94	-3.14	-3.25	-3.31	-3.34
32	-0.38	-0.76	-1.33	-1.44	-1.61	-2.54	-2.98	-3.14	-3.23	-3.29	-3.32
33	-0.37	-0.83	-1.43	-1.54	-1.70	-2.48	-2.84	-2.97	-3.06	-3.10	-3.13
34	-0.41	-0.88	-1.44	-1.54	-1.67	-2.24	-2.53	-2.64	-2.71	-2.75	-2.81
35	-0.37	-0.70	-1.03	-1.11	-1.17	-1.48	-1.67	-1.73	-1.78	-1.80	-1.82
36	-0.30	-0.48	-0.64	-0.70	-0.72	-0.88	-1.00	-1.03	-1.07	-1.08	-1.09
37	-0.20	-0.28	-0.34	-0.37	-0.37	-0.42	-0.49	-0.50	-0.52	-0.53	-0.53
38	-0.15	-0.19	-0.22	-0.24	-0.23	-0.26	-0.31	-0.30	-0.32	-0.32	-0.32
39	-0.10	-0.12	-0.14	-0.16	-0.14	-0.16	-0.20	-0.18	-0.20	-0.20	-0.20
Edge of Gob >											
40	-0.07	-0.09	-0.10	-0.13	-0.10	-0.11	-0.15	-0.13	-0.14	-0.14	-0.14
41	-0.05	-0.05	-0.07	-0.08	-0.05	-0.07	-0.11	-0.09	-0.10	-0.10	-0.10
42	-0.01	-0.03	-0.04	-0.05	-0.03	-0.04	-0.08	-0.05	-0.07	-0.07	-0.08
Edge of Gob >											
43	-0.01	-0.01	-0.03	-0.04	-0.02	-0.03	-0.05	-0.04	-0.05	-0.05	-0.05
44	-0.02	-0.01	-0.02	-0.04	-0.01	-0.02	-0.05	-0.04	-0.03	-0.04	-0.04
45	-0.01	0.00	-0.01	-0.03	-0.01	-0.01	-0.04	-0.02	-0.03	-0.03	-0.02
46	-	-	-	-	-	-	-	-	-	-	-
47	-	-	-	-	-	-	-	-	-	-	-
48	-	-	-	-	-	-	-	-	-	-	-
49	-	-	-	-	-	-	-	-	-	-	-
50	-	-	-	-	-	-	-	-	-	-	-
51	-	-	-	-	-	-	-	-	-	-	-
Near Panel Center >											
52	-	-	-	-	-	-	-	-	-	-	-
53	-	-	-	-	-	-	-	-	-	-	-
54	-	-	-	-	-	-	-	-	-	-	-
55	-	-	-	-	-	-	-	-	-	-	-
56	-	-	-	-	-	-	-	-	-	-	-
57	-	-	-	-	-	-	-	-	-	-	-
58	-	-	-	-	-	-	-	-	-	-	-
59	-	-	-	-	-	-	-	-	-	-	-
60	-	-	-	-	-	-	-	-	-	-	-
61	-	-	-	-	-	-	-	-	-	-	-
Edge of Gob >											
62	-	-	-	-	-	-	-	-	-	-	-
63	-	-	-	-	-	-	-	-	-	-	-
64	-	-	-	-	-	-	-	-	-	-	-
Edge of Gob >											
65	-	-	-	-	-	-	-	-	-	-	-
66	-	-	-	-	-	-	-	-	-	-	-
67	-	-	-	-	-	-	-	-	-	-	-
68	-	-	-	-	-	-	-	-	-	-	-
69	-	-	-	-	-	-	-	-	-	-	-
70	-	-	-	-	-	-	-	-	-	-	-
71	-	-	-	-	-	-	-	-	-	-	-
72	-	-	-	-	-	-	-	-	-	-	-
73	-	-	-	-	-	-	-	-	-	-	-
74	-	-	-	-	-	-	-	-	-	-	-
75	-	-	-	-	-	-	-	-	-	-	-
76	-	-	-	-	-	-	-	-	-	-	-
77	-	-	-	-	-	-	-	-	-	-	-
78	-	-	-	-	-	-	-	-	-	-	-
79	-	-	-	-	-	-	-	-	-	-	-
80	-	-	-	-	-	-	-	-	-	-	-

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THE OHIO VALLEY COAL COMPANY
SUMMARY OF SUBSIDENCE SURVEYS ALONG STATE ROUTE 9
OVER LONGWALL PANELS DESIGNATED AS 10-WEST and 11-WEST

page 3

PANEL DESIGNATION > 10-WEST (FIRST PANEL)	22	23	24	25	26	27	28	29	30	31	32
SURVEY NUMBER >	22	23	24	25	26	27	28	29	30	31	32
SURVEY DATE >	11-19-91	11-20-91	11-21-91	11-22-91	11-23-91	11-24-91	11-25-91	11-26-91	11-27-91	11-28-91	11-29-91
LONGWALL STATUS >	RUNNING	RUNNING	RUNNING	RUNNING	RUNNING	IDLE	RUNNING	RUNNING	RUNNING	IDLE	IDLE
DAYS AFTER 1st SURVEY >	32	33	34	35	36	37	38	39	40	41	42
FACE PLUS @ SURVEY >	1669	1625	1540	1465	1431	1404	1369	1283	1259	1236	1236
<hr/>											
STATION NUMBER:											
4	-0.05	-0.09	-0.11	-0.13	-0.19	-0.28	-0.34	-0.41	-0.50		-0.57
5	-0.03	-0.08	-0.10	-0.17	-0.23	-0.33	-0.36	-0.49	-0.58		-0.67
6	-0.09	-0.13	-0.14	-0.21	-0.32	-0.37	-0.47	-0.56	-0.66		-0.75
7	-0.10	-0.11	-0.15	-0.23	-0.33	-0.43	-0.49	-0.61	-0.71		-0.81
8	-0.08	-0.12	-0.15	-0.24	-0.35	-0.45	-0.52	-0.64	-0.74		-0.84
Edge of Gob >											
9	-0.09	-0.12	-0.16	-0.27	-0.38	-0.49	-0.55	-0.68	-0.80		-0.89
10	-0.10	-0.13	-0.18	-0.31	-0.41	-0.52	-0.60	-0.74	-0.85		-0.94
11	-0.10	-0.14	-0.21	-0.34	-0.48	-0.59	-0.66	-0.81	-0.93		-1.02
Edge of Gob >											
12	-0.10	-0.14	-0.22	-0.39	-0.52	-0.67	-0.75	-0.91	-1.02		-1.12
13	-0.13	-0.19	-0.31	-0.53	-0.68	-0.83	-0.94	-1.10	-1.22		-1.31
14	-0.16	-0.24	-0.44	-0.73	-0.91	-1.08	-1.18	-1.34	-1.45		-1.54
15	-0.21	-0.32	-0.63	-1.00	-1.21	-1.36	-1.45	-1.61	-1.70		-1.78
16	-0.30	-0.47	-0.94	-1.36	-1.55	-1.70	-1.79	-1.92	-2.01		-2.07
17	-0.49	-0.79	-1.41	-1.82	-2.00	-2.12	-2.20	-2.30	-2.38		-2.43
18	-0.82	-1.23	-1.85	-2.20	-2.34	-2.45	-2.51	-2.58	-2.65		-2.70
19	-1.24	-1.68	-2.24	-2.53	-2.63	-2.74	-2.79	-2.83	-2.89		-2.93
20	-1.69	-2.11	-2.54	-2.76	-2.85	-2.93	-2.97	-3.00	-3.05		-3.09
21	-2.12	-2.46	-2.77	-2.94	-3.01	-3.08	-3.11	-3.12	-3.16		-3.20
22	-2.42	-2.69	-2.91	-3.04	-3.10	-3.15	-3.18	-3.19	-3.22		-3.25
23	-2.70	-2.90	-3.06	-3.16	-3.20	-3.24	-3.28	-3.27	-3.31		-3.33
24	-2.89	-3.06	-3.18	-3.25	-3.30	-3.33	-3.36	-3.35	-3.36		-3.40
25	-3.04	-3.18	-3.25	-3.30	-3.35	-3.38	-3.41	-3.39	-3.42		-3.44
26	-3.24	-3.33	-3.39	-3.43	-3.46	-3.48	-3.51	-3.50	-3.52		-3.54
27	-3.30	-3.36	-3.40	-3.44	-3.47	-3.48	-3.51	-3.50	-3.51		-3.53
28	-3.38	-3.43	-3.47	-3.49	-3.52	-3.53	-3.56	-3.55	-3.56		-3.57
Near Panel Center >											
29	-3.40	-3.45	-3.47	-3.49	-3.50	-3.52	-3.55	-3.54	-3.54		-3.56
30	-3.40	-3.43	-3.45	-3.48	-3.48	-3.48	-3.52	-3.51	-3.52		-3.53
31	-3.36	-3.40	-3.42	-3.44	-3.45	-3.46	-3.48	-3.47	-3.48		-3.48
32	-3.34	-3.36	-3.38	-3.40	-3.44	-3.43	-3.44	-3.43	-3.43		-3.44
33	-3.15	-3.17	-3.19	-3.20	-3.20	-3.22	-3.24	-3.23	-3.24		-3.24
34	-2.78	-2.80	-2.81	-2.82	-2.84	-2.85	-2.87	-2.86	-2.87		-2.86
35	-1.83	-1.84	-1.85	-1.86	-1.87	-1.88	-1.90	-1.89	-1.89		-1.90
36	-1.10	-1.11	-1.12	-1.13	-1.13	-1.14	-1.15	-1.15	-1.15		-1.15
37	-0.54	-0.54	-0.55	-0.56	-0.56	-0.57	-0.59	-0.58	-0.58		-0.58
38	-0.32	-0.32	-0.33	-0.43	-0.34	-0.34	-0.37	-0.35	-0.35		-0.34
39	-0.20	-0.19	-0.20	-0.20	-0.19	-0.22	-0.24	-0.22	-0.22		-0.21
Edge of Gob >											
40	-0.14	-0.14	-0.14	-0.14	-0.16	-0.15	-0.17	-0.15	-0.16		-0.15
41	-0.09	-0.09	-0.09	-0.09	-0.10	-0.11	-0.12	-0.10	-0.10		-0.10
42	-0.06	-0.06	-0.06	-0.06	-0.06	-0.07	-0.08	-0.07	-0.07		-0.06
Edge of Gob >											
43	-0.04	-0.04	-0.04	-0.03	-0.04	-0.04	-0.06	-0.04	-0.05		-0.04
44	-0.03	-0.03	-0.03	-0.03	-0.02	-0.03	-0.05	-0.04	-0.01		-0.03
45	-0.02	-0.02	-0.02	-0.02	-0.02	-0.02	-0.03	-0.02	-0.02		-0.02
46	-	-	-	-	-	-	-	-	-		-
47	-	-	-	-	-	-	-	-	-		-
48	-	-	-	-	-	-	-	-	-		-
49	-	-	-	-	-	-	-	-	-		-
50	-	-	-	-	-	-	-	-	-		-
51	-	-	-	-	-	-	-	-	-		-
Near Panel Center >											
52	-	-	-	-	-	-	-	-	-		-
53	-	-	-	-	-	-	-	-	-		-
54	-	-	-	-	-	-	-	-	-		-
55	-	-	-	-	-	-	-	-	-		-
56	-	-	-	-	-	-	-	-	-		-
57	-	-	-	-	-	-	-	-	-		-
58	-	-	-	-	-	-	-	-	-		-
59	-	-	-	-	-	-	-	-	-		-
60	-	-	-	-	-	-	-	-	-		-
61	-	-	-	-	-	-	-	-	-		-
Edge of Gob >											
62	-	-	-	-	-	-	-	-	-		-
63	-	-	-	-	-	-	-	-	-		-
64	-	-	-	-	-	-	-	-	-		-
Edge of Gob >											
65	-	-	-	-	-	-	-	-	-		-
66	-	-	-	-	-	-	-	-	-		-
67	-	-	-	-	-	-	-	-	-		-
68	-	-	-	-	-	-	-	-	-		-
69	-	-	-	-	-	-	-	-	-		-
70	-	-	-	-	-	-	-	-	-		-
71	-	-	-	-	-	-	-	-	-		-
72	-	-	-	-	-	-	-	-	-		-
73	-	-	-	-	-	-	-	-	-		-
74	-	-	-	-	-	-	-	-	-		-
75	-	-	-	-	-	-	-	-	-		-
76	-	-	-	-	-	-	-	-	-		-
77	-	-	-	-	-	-	-	-	-		-
78	-	-	-	-	-	-	-	-	-		-
79	-	-	-	-	-	-	-	-	-		-
80	-	-	-	-	-	-	-	-	-		-

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THE OHIO VALLEY COAL COMPANY
SUMMARY OF SUBSIDENCE SURVEYS ALONG STATE ROUTE 9
OVER LONGWALL PANELS DESIGNATED AS 10-WEST and 11-WEST

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PANEL DESIGNATION > 10-WEST (FIRST PANEL)	33	34	35	36	37	38	39	40	41	42	43
SURVEY NUMBER >	33	34	35	36	37	38	39	40	41	42	43
SURVEY DATE >	11-30-91	12-01-91	12-02-91	12-03-91	12-04-91	12-05-91	12-06-91	12-07-91	12-08-91	12-14-91	12-20-91
LONGWALL STATUS >	RUNNING	IDLE	RUNNING	RUNNING	RUNNING	RUNNING	RUNNING	RUNNING	IDLE RECOVER	RECOVER	
DAYS AFTER 1st SURVEY >	43	44	45	46	47	48	49	50	51	57	63
FACE PLUS @ SURVEY >	1227	1227	1196	1146	1079	1033	983	951	924	734	715
<hr/>											
STATION NUMBER:											
4	-0.60	-0.61	-0.59	-0.62	-0.67	-0.68	-0.71	-0.75	-0.83	-0.92	-0.89
5	-0.58	-0.68	-0.70	-0.71	-0.78	-0.79	-0.83	-0.87	-0.96	-1.04	-1.00
6	-0.77	-0.77	-0.78	-0.81	-0.87	-0.90	-0.94	-0.98	-1.07	-1.13	-1.11
7	-0.82	-0.82	-0.83	-0.87	-0.94	-0.96	-0.99	-1.02	-1.10	-1.18	-1.16
8	-0.86	-0.86	-0.89	-0.90	-0.97	-0.98	-1.01	-1.05	-1.13	-1.20	-1.20
Edge of Gob >											
9	-0.89	-0.90	-0.92	-0.96	-1.01	-1.03	-1.07	-1.09	-1.18	-1.25	-1.24
10	-0.96	-0.96	-0.98	-1.00	-1.06	-1.08	-1.11	-1.14	-1.21	-1.29	-1.28
11	-1.03	-1.03	-1.04	-1.08	-1.14	-1.16	-1.19	-1.21	-1.29	-1.27	-1.36
Edge of Gob >											
12	-1.12	-1.12	-1.14	-1.17	-1.24	-1.24	-1.28	-1.30	-1.37	-1.47	-1.42
13	-1.32	-1.32	-1.33	-1.36	-1.42	-1.43	-1.46	-1.48	-1.55	-1.63	-1.60
14	-1.54	-1.54	-1.56	-1.58	-1.64	-1.65	-1.67	-1.69	-1.75	-1.84	-1.80
15	-1.79	-1.79	-1.80	-1.82	-1.87	-1.87	-1.90	-1.92	-1.98	-2.06	-2.02
16	-2.08	-2.07	-2.09	-2.09	-2.15	-2.15	-2.17	-2.19	-2.25	-2.31	-2.28
17	-2.43	-2.43	-2.44	-2.44	-2.50	-2.49	-2.51	-2.53	-2.59	-2.65	-2.62
18	-2.70	-2.69	-2.70	-2.70	-2.75	-2.74	-2.76	-2.78	-2.84	-2.89	-2.86
19	-2.93	-2.93	-2.93	-2.93	-2.98	-2.97	-2.98	-3.00	-3.05	-3.11	-3.08
20	-3.08	-3.08	-3.09	-3.08	-3.12	-3.11	-3.12	-3.14	-3.20	-3.25	-3.21
21	-3.19	-3.19	-3.19	-3.18	-3.21	-3.21	-3.22	-3.23	-3.29	-3.35	-3.30
22	-3.25	-3.24	-3.24	-3.23	-3.27	-3.25	-3.26	-3.28	-3.34	-3.39	-3.34
23	-3.33	-3.34	-3.32	-3.31	-3.35	-3.33	-3.35	-3.36	-3.42	-3.47	-3.42
24	-3.40	-3.39	-3.39	-3.38	-3.41	-3.40	-3.41	-3.42	-3.48	-3.52	-3.49
25	-3.44	-3.44	-3.43	-3.42	-3.45	-3.44	-3.45	-3.46	-3.52	-3.57	-3.55
26	-3.53	-3.54	-3.53	-3.53	-3.56	-3.54	-3.55	-3.56	-3.62	-3.66	-3.63
27	-3.52	-3.52	-3.53	-3.52	-3.54	-3.54	-3.54	-3.55	-3.60	-3.64	-3.63
28	-3.58	-3.57	-3.57	-3.56	-3.59	-3.58	-3.59	-3.60	-3.65	-3.69	-3.65
Near Panel Center >											
29	-3.56	-3.56	-3.56	-3.56	-3.57	-3.57	-3.57	-3.58	-3.63	-3.67	-3.65
30	-3.52	-3.53	-3.53	-3.52	-3.54	-3.53	-3.54	-3.55	-3.60	-3.64	-3.62
31	-3.48	-3.49	-3.48	-3.48	-3.50	-3.50	-3.50	-3.51	-3.56	-3.62	-3.57
32	-3.43	-3.46	-3.44	-3.43	-3.45	-3.45	-3.46	-3.46	-3.51	-3.58	-3.54
33	-3.23	-3.25	-3.23	-3.23	-3.25	-3.25	-3.25	-3.26	-3.31	-3.36	-3.33
34	-2.86	-2.87	-2.86	-2.85	-2.88	-2.87	-2.88	-2.88	-2.93	-3.00	-2.96
35	-1.88	-1.90	-1.89	-1.88	-1.91	-1.90	-1.91	-1.91	-1.96	-2.03	-1.98
36	-1.14	-1.16	-1.15	-1.14	-1.17	-1.15	-1.17	-1.17	-1.22	-1.27	-1.23
37	-0.56	-0.58	-0.57	-0.56	-0.59	-0.58	-0.59	-0.59	-0.64	-0.70	-0.66
38	-0.33	-0.34	-0.34	-0.32	-0.35	-0.34	-0.35	-0.35	-0.40	-0.46	-0.41
39	-0.19	-0.22	-0.21	-0.20	-0.22	-0.21	-0.22	-0.22	-0.27	-0.37	-0.29
Edge of Gob >											
40	-0.13	-0.15	-0.14	-0.13	-0.15	-0.14	-0.15	-0.15	-0.20	-0.25	-0.23
41	-0.08	-0.10	-0.09	-0.08	-0.11	-0.09	-0.11	-0.10	-0.15	-0.21	-0.19
42	-0.05	-0.06	-0.05	-0.04	-0.06	-0.06	-0.07	-0.06	-0.12	-0.19	-0.15
Edge of Gob >											
43	-0.03	-0.04	-0.03	-0.02	-0.04	-0.08	-0.04	-0.04	-0.10	-0.16	-0.12
44	-0.02	-0.04	-0.03	-0.01	-0.03	-0.03	-0.04	-0.04	-0.09	-0.15	-0.09
45	0.00	-0.02	-0.01	-0.01	-0.02	-0.01	-0.02	-0.01	-0.07	-0.13	-0.08
46	-	-	-	-	-	-	-	-	-	-	-
47	-	-	-	-	-	-	-	-	-	-	-
48	-	-	-	-	-	-	-	-	-	-	-
49	-	-	-	-	-	-	-	-	-	-	-
50	-	-	-	-	-	-	-	-	-	-	-
51	-	-	-	-	-	-	-	-	-	-	-
Near Panel Center >											
52	-	-	-	-	-	-	-	-	-	-	-
53	-	-	-	-	-	-	-	-	-	-	-
54	-	-	-	-	-	-	-	-	-	-	-
55	-	-	-	-	-	-	-	-	-	-	-
56	-	-	-	-	-	-	-	-	-	-	-
57	-	-	-	-	-	-	-	-	-	-	-
58	-	-	-	-	-	-	-	-	-	-	-
59	-	-	-	-	-	-	-	-	-	-	-
60	-	-	-	-	-	-	-	-	-	-	-
61	-	-	-	-	-	-	-	-	-	-	-
Edge of Gob >											
62	-	-	-	-	-	-	-	-	-	-	-
63	-	-	-	-	-	-	-	-	-	-	-
64	-	-	-	-	-	-	-	-	-	-	-
Edge of Gob >											
65	-	-	-	-	-	-	-	-	-	-	-
66	-	-	-	-	-	-	-	-	-	-	-
67	-	-	-	-	-	-	-	-	-	-	-
68	-	-	-	-	-	-	-	-	-	-	-
69	-	-	-	-	-	-	-	-	-	-	-
70	-	-	-	-	-	-	-	-	-	-	-
71	-	-	-	-	-	-	-	-	-	-	-
72	-	-	-	-	-	-	-	-	-	-	-
73	-	-	-	-	-	-	-	-	-	-	-
74	-	-	-	-	-	-	-	-	-	-	-
75	-	-	-	-	-	-	-	-	-	-	-
76	-	-	-	-	-	-	-	-	-	-	-
77	-	-	-	-	-	-	-	-	-	-	-
78	-	-	-	-	-	-	-	-	-	-	-
79	-	-	-	-	-	-	-	-	-	-	-
80	-	-	-	-	-	-	-	-	-	-	-

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THE OHIO VALLEY COAL COMPANY
SUMMARY OF SUBSIDENCE SURVEYS ALONG STATE ROUTE 9
OVER LONGWALL PANELS DESIGNATED AS 10-WEST and 11-WEST

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PANEL DESIGNATION > 10-WEST (FIRST PANEL)				
SURVEY NUMBER >	44	45	46	47
SURVEY DATE > 12-28-91 01-04-92 02-03-92 03-04-92				
LONGWALL STATUS > RECOVERED RECOVERED RECOVERED RECOVERED				
DAYS AFTER 1st SURVEY >	71	78	108	138
FACE PLUS @ SURVEY >	715	715	715	715

STATION NUMBER				
4	-0.86	-0.99	-0.96	-1.00
5	-0.97	-1.11	-1.07	-1.12
6	-1.10	-1.21	-1.19	-1.23
7	-1.14	-1.25	-1.22	-1.27
8	-1.17	-1.28	-1.26	-1.30
Edge of Gob >				
9	-1.20	-1.33	-1.30	-1.34
10	-1.25	-1.37	-1.33	-1.38
11	-1.31	-1.43	-1.40	-1.44
Edge of Gob >				
12	-1.41	-1.52	-1.47	-1.52
13	-1.57	-1.69	-1.64	-1.69
14	-1.77	-1.89	-1.84	-1.89
15	-1.99	-2.11	-2.06	-2.11
16	-2.25	-2.37	-2.32	-2.36
17	-2.59	-2.70	-2.65	-2.69
18	-2.89	-2.94	-2.89	-2.91
19	-3.06	-3.18	-3.11	-3.13
20	-3.19	-3.30	-3.25	-3.27
21	-3.27	-3.39	-3.34	-3.36
22	-3.32	-3.43	-3.38	-3.40
23	-3.39	-3.49	-3.45	-3.47
24	-3.46	-3.57	-3.53	-3.54
25	-3.50	-3.60	-3.57	-3.58
26	-3.61	-3.70	-3.66	-3.67
27	-3.59	-3.68	-3.65	-3.65
28	-3.63	-3.73	-3.69	-3.69
Near Panel Center >				
29	-3.63	-3.71	-3.67	-3.67
30	-3.59	-3.68	-3.64	-3.65
31	-3.55	-3.63	-3.61	-3.61
32	-3.51	-3.59	-3.55	-3.56
33	-3.31	-3.39	-3.35	-3.36
34	-2.93	-3.01	-2.98	-2.98
35	-1.98	-2.04	-2.00	-2.00
36	-1.20	-1.29	-1.25	-1.25
37	-0.64	-0.71	-0.68	-0.68
38	-0.38	-0.46	-0.41	-0.40
39	-0.26	-0.33	-0.28	-0.28
Edge of Gob >				
40	-0.20	-0.28	-0.22	-0.20
41	-0.17	-0.21	-0.17	-0.15
42	-0.12	-0.17	-0.13	-0.12
Edge of Gob >				
43	-0.10	-0.15	-0.11	-0.10
44	-0.08	-0.14	-0.10	-0.08
45	-0.05	-0.13	-0.08	-0.08
46	-	-	-	-
47	-	-	-	-
48	-	-	-	-
49	-	-	-	-
50	-	-	-	-
51	-	-	-	-
Near Panel Center >				
52	-	-	-	-
53	-	-	-	-
54	-	-	-	-
55	-	-	-	-
56	-	-	-	-
57	-	-	-	-
58	-	-	-	-
59	-	-	-	-
60	-	-	-	-
61	-	-	-	-
Edge of Gob >				
62	-	-	-	-
63	-	-	-	-
64	-	-	-	-
Edge of Gob >				
65	-	-	-	-
66	-	-	-	-
67	-	-	-	-
68	-	-	-	-
69	-	-	-	-
70	-	-	-	-
71	-	-	-	-
72	-	-	-	-
73	-	-	-	-
74	-	-	-	-
75	-	-	-	-
76	-	-	-	-
77	-	-	-	-
78	-	-	-	-
79	-	-	-	-
80	-	-	-	-

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THE OHIO VALLEY COAL COMPANY
SUMMARY OF SUBSIDENCE SURVEYS ALONG STATE ROUTE 9
OVER LONGWALL PANELS DESIGNATED AS 10-WEST and 11-WEST

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PANEL DESIGNATION >	11-WEST (SECOND PANEL)											
SURVEY NUMBER >	48	49	50	51	52	53	54	55	56	57	58	
SURVEY DATE >	03/18/92	03/25/92	03/26/92	03/27/92	03/28/92	03/29/92	03/30/92	03/31/92	04/01/92	04/02/92	04/03/92	
LONGWALL STATUS >	RUNNING	RUNNING	RUNNING	RUNNING	RUNNING	SUNDAY	RUNNING	RUNNING	RUNNING	RUNNING	RUNNING	
DAYS AFTER 1st SURVEY >	152	159	160	161	162	163	164	165	166	167	168	
FACE PLUS 9 SURVEY >	7285	2961	2881	2785	2694	2646	2649	2546	2482	2430	2347	
STATION NUMBER												
4	-	-	-	-	-	-	-	-	-	-	-	
5	-	-	-	-	-	-	-	-	-	-	-	
6	-	-	-	-	-	-	-	-	-	-	-	
7	-	-	-	-	-	-	-	-	-	-	-	
8	-	-	-	-	-	-	-	-	-	-	-	
Edge of Gob >												
9	-	-	-	-	-	-	-	-	-	-	-	
10	-	-	-	-	-	-	-	-	-	-	-	
11	-	-	-	-	-	-	-	-	-	-	-	
Edge of Gob >												
12	-	-	-	-	-	-	-	-	-	-	-	
13	-	-	-	-	-	-	-	-	-	-	-	
14	-	-	-	-	-	-	-	-	-	-	-	
15	-	-	-	-	-	-	-	-	-	-	-	
16	-	-	-	-	-	-	-	-	-	-	-	
17	-	-	-	-	-	-	-	-	-	-	-	
18	-	-	-	-	-	-	-	-	-	-	-	
19	-	-	-	-	-	-	-	-	-	-	-	
20	-	-	-	-	-	-	-	-	-	-	-	
21	-	-	-	-	-	-	-	-	-	-	-	
22	-	-	-	-	-	-	-	-	-	-	-	
23	-	-	-	-	-	-	-	-	-	-	-	
24	-	-	-	-	-	-	-	-	-	-	-	
25	-	-	-	-	-	-	-	-	-	-	-	
26	-	-	-	-	-	-	-	-	-	-	-	
27	-	-	-	-	-	-	-	-	-	-	-	
28	-3.71	-3.74	-3.72	-3.75	-3.74	-3.74	-3.73	-3.75	-3.73	-3.74	-3.73	
Near Panel Center >												
29	-3.69	-3.72	-3.70	-3.73	-3.72	-3.73	-3.71	-3.73	-3.71	-3.72	-3.71	
30	-3.68	-3.69	-3.67	-3.71	-3.69	-3.70	-3.69	-3.70	-3.69	-3.70	-3.69	
31	-3.62	-3.65	-3.63	-3.66	-3.65	-3.66	-3.64	-3.66	-3.65	-3.66	-3.64	
32	-3.57	-3.60	-3.58	-3.61	-3.60	-3.60	-3.59	-3.61	-3.60	-3.61	-3.60	
33	-3.37	-3.40	-3.39	-3.40	-3.39	-3.40	-3.39	-3.40	-3.40	-3.41	-3.41	
34	-2.39	-2.02	-3.00	-3.03	-3.01	-3.02	-3.01	-3.03	-3.03	-3.04	-3.05	
35	-2.02	-2.04	-2.02	-2.05	-2.04	-2.05	-2.05	-2.06	-2.06	-2.09	-2.11	
36	-1.27	-1.29	-1.27	-1.31	-1.29	-1.31	-1.30	-1.31	-1.32	-1.34	-1.36	
37	-0.68	-0.70	-0.69	-0.73	-0.70	-0.72	-0.71	-0.73	-0.74	-0.77	-0.81	
38	-0.43	-0.44	-0.43	-0.46	-0.45	-0.46	-0.46	-0.48	-0.49	-0.52	-0.57	
39	-0.31	-0.32	-0.31	-0.34	-0.33	-0.34	-0.33	-0.36	-0.37	-0.40	-0.45	
Edge of Gob >												
40	-0.23	-0.24	-0.23	-0.26	-0.25	-0.26	-0.25	-0.27	-0.29	-0.32	-0.37	
41	-0.19	-0.20	-0.18	-0.21	-0.20	-0.22	-0.21	-0.23	-0.24	-0.27	-0.33	
42	-0.15	-0.16	-0.14	-0.17	-0.16	-0.18	-0.17	-0.19	-0.20	-0.23	-0.29	
Edge of Gob >												
43	-0.12	-0.13	-0.12	-0.14	-0.13	-0.15	-0.14	-0.16	-0.17	-0.20	-0.26	
44	-0.11	-0.12	-0.11	-0.13	-0.12	-0.14	-0.13	-0.15	-0.16	-0.19	-0.25	
45	-0.09	-0.11	-0.09	-0.11	-0.10	-0.12	-0.11	-0.13	-0.14	-0.16	-0.23	
46	-0.08	-0.10	-0.08	-0.11	-0.10	-0.11	-0.10	-0.12	-0.13	-0.16	-0.24	
47	-0.08	-0.10	-0.08	-0.10	-0.10	-0.11	-0.10	-0.12	-0.13	-0.16	-0.25	
48	-0.08	-0.10	-0.08	-0.11	-0.10	-0.11	-0.10	-0.12	-0.14	-0.17	-0.27	
49	-0.08	-0.11	-0.09	-0.11	-0.11	-0.12	-0.11	-0.13	-0.15	-0.18	-0.29	
50	-0.08	-0.10	-0.09	-0.11	-0.11	-0.12	-0.11	-0.13	-0.15	-0.19	-0.30	
51	-0.08	-0.10	-0.08	-0.11	-0.10	-0.11	-0.11	-0.13	-0.15	-0.19	-0.30	
Near Panel Center >												
52	-0.08	-0.10	-0.09	-0.12	-0.11	-0.12	-0.11	-0.14	-0.16	-0.20	-0.33	
53	-0.07	-0.09	-0.07	-0.10	-0.10	-0.10	-0.10	-0.12	-0.14	-0.18	-0.30	
54	-0.09	-0.11	-0.10	-0.12	-0.12	-0.12	-0.12	-0.14	-0.16	-0.20	-0.31	
55	-0.09	-0.10	-0.09	-0.11	-0.11	-0.11	-0.11	-0.13	-0.14	-0.18	-0.29	
56	-0.10	-0.10	-0.09	-0.11	-0.11	-0.12	-0.11	-0.13	-0.14	-0.18	-0.26	
57	-0.09	-0.08	-0.09	-0.11	-0.10	-0.11	-0.11	-0.12	-0.14	-0.16	-0.24	
58	-0.09	-0.10	-0.08	-0.10	-0.10	-0.11	-0.10	-0.12	-0.13	-0.15	-0.22	
59	-0.08	-0.09	-0.08	-0.10	-0.10	-0.11	-0.10	-0.11	-0.12	-0.15	-0.20	
60	-0.08	-0.09	-0.08	-0.09	-0.09	-0.10	-0.10	-0.11	-0.12	-0.14	-0.17	
61	-0.09	-0.09	-0.08	-0.09	-0.09	-0.10	-0.09	-0.11	-0.11	-0.13	-0.16	
Edge of Gob >												
62	-0.07	-0.08	-0.07	-0.09	-0.09	-0.09	-0.09	-0.10	-0.10	-0.11	-0.13	
63	-0.07	-0.09	-0.08	-0.09	-0.09	-0.09	-0.10	-0.10	-0.10	-0.11	-0.12	
64	-0.09	-0.10	-0.09	-0.10	-0.10	-0.10	-0.11	-0.10	-0.11	-0.11	-0.12	
Edge of Gob >												
65	-0.07	-0.09	-0.08	-0.09	-0.09	-0.09	-0.09	-0.10	-0.10	-0.10	-0.11	
66	-0.07	-0.09	-0.09	-0.10	-0.09	-0.09	-0.10	-0.10	-0.10	-0.10	-0.11	
67	-0.08	-0.09	-0.09	-0.10	-0.10	-0.09	-0.09	-0.10	-0.10	-0.10	-0.11	
68	-0.07	-0.09	-0.09	-0.09	-0.09	-0.09	-0.09	-0.09	-0.09	-0.09	-0.10	
69	-0.08	-0.09	-0.09	-0.10	-0.10	-0.09	-0.10	-0.10	-0.10	-0.10	-0.11	
70	-0.09	-0.10	-0.09	-0.10	-0.10	-0.10	-0.10	-0.10	-0.10	-0.11	-0.11	
71	-0.08	-0.09	-0.08	-0.09	-0.09	-0.09	-0.09	-0.09	-0.09	-0.10	-0.11	
72	-0.01	-0.02	-0.02	-0.03	-0.03	-0.03	-0.03	-0.03	-0.03	-0.03	-0.03	
73	-0.02	-0.02	-0.02	-0.02	-0.03	-0.03	-0.03	-0.03	-0.03	-0.03	-0.03	
74	-0.02	-0.02	-0.02	-0.03	-0.03	-0.03	-0.03	-0.03	-0.03	-0.03	-0.03	
75	-0.02	-0.02	-0.01	-0.02	-0.02	-0.02	-0.02	-0.02	-0.02	-0.02	-0.03	
76	-0.01	-0.01	-0.01	-0.01	-0.02	-0.02	-0.02	-0.02	-0.01	-0.01	-0.02	
77	-0.00	0.00	0.00	-0.01	-0.01	-0.01	-0.01	0.00	-0.00	-0.01	-0.01	
78	-0.00	0.00	0.00	0.00	-0.00	-0.00	-0.00	0.00	-0.00	0.00	-0.00	
79	-0.00	-0.00	-0.00	-0.00	-0.00	-0.00	-0.00	-0.00	-0.00	-0.00	-0.00	
80	-0.00	-0.00	-0.00	-0.00	-0.00	-0.00	-0.00	-0.00	-0.00	-0.00	-0.00	

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THE OHIO VALLEY COAL COMPANY
SUMMARY OF SUBSIDENCE SURVEYS ALONG STATE ROUTE 9
OVER LONGWALL PANELS DESIGNATED AS 10-WEST and 11-WEST

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PANEL DESIGNATION> 11-WEST (SECOND PANEL)	59	60	61	62	63	64	65	66	67	68	69
SURVEY NUMBER>	59	60	61	62	63	64	65	66	67	68	69
SURVEY DATE>	04/04/92	04/05/92	04/06/92	04/07/92	04/08/92	04/09/92	04/10/92	04/11/92	04/12/92	04/13/92	04/14/92
LONGWALL STATUS>	RUNNING	IDLE	RUNNING	RUNNING	RUNNING	RUNNING	RUNNING	RUNNING	IDLE	RUNNING	RUNNING
DAYS AFTER 1st SURVEY>	169	170	171	172	173	174	175	176	177	178	179
FACE PLUS @ SURVEY>	2307	2251	2221	2158	2094	2006	1926	1874	1843	1802	1725
STATION NUMBER											
4	-	-	-	-	-	-	-	-	-	-	-
5	-	-	-	-	-	-	-	-	-	-	-
6	-	-	-	-	-	-	-	-	-	-	-
7	-	-	-	-	-	-	-	-	-	-	-
8	-	-	-	-	-	-	-	-	-	-	-
Edge of Gob>	-	-	-	-	-	-	-	-	-	-	-
9	-	-	-	-	-	-	-	-	-	-	-
10	-	-	-	-	-	-	-	-	-	-	-
11	-	-	-	-	-	-	-	-	-	-	-
Edge of Gob>	-	-	-	-	-	-	-	-	-	-	-
12	-	-	-	-	-	-	-	-	-	-	-
13	-	-	-	-	-	-	-	-	-	-	-
14	-	-	-	-	-	-	-	-	-	-	-
15	-	-	-	-	-	-	-	-	-	-	-
16	-	-	-	-	-	-	-	-	-	-	-
17	-	-	-	-	-	-	-	-	-	-	-
18	-	-	-	-	-	-	-	-	-	-	-
19	-	-	-	-	-	-	-	-	-	-	-
20	-	-	-	-	-	-	-	-	-	-	-
21	-	-	-	-	-	-	-	-	-	-	-
22	-	-	-	-	-	-	-	-	-	-	-
23	-	-	-	-	-	-	-	-	-	-	-
24	-	-	-	-	-	-	-	-	-	-	-
25	-	-	-	-	-	-	-	-	-	-	-
26	-	-	-	-	-	-	-	-	-	-	-
27	-	-	-	-	-	-	-	-	-	-	-
28	-3.73	-3.72	-3.74	-3.73	-3.73	-3.75	-3.74	-3.75	-3.74	-3.74	-3.76
Near Panel Center>	-3.71	-3.70	-3.72	-3.71	-3.71	-3.74	-3.73	-3.73	-3.73	-3.73	-3.76
29	-3.69	-3.68	-3.70	-3.69	-3.69	-3.72	-3.71	-3.72	-3.71	-3.72	-3.75
30	-3.65	-3.64	-3.66	-3.65	-3.65	-3.68	-3.68	-3.68	-3.68	-3.68	-3.72
31	-3.60	-3.59	-3.62	-3.61	-3.62	-3.65	-3.65	-3.65	-3.65	-3.65	-3.69
32	-3.41	-3.40	-3.43	-3.43	-3.44	-3.46	-3.47	-3.49	-3.50	-3.50	-3.53
33	-3.06	-3.07	-3.10	-3.12	-3.14	-3.19	-3.20	-3.22	-3.23	-3.24	-3.27
34	-2.14	-2.18	-2.23	-2.30	-2.35	-2.44	-2.48	-2.52	-2.54	-2.56	-2.60
35	-1.43	-1.48	-1.54	-1.63	-1.71	-1.83	-1.88	-1.94	-1.96	-1.98	-2.03
36	-0.97	-0.94	-1.00	-1.10	-1.20	-1.33	-1.40	-1.45	-1.49	-1.52	-1.56
37	-0.63	-0.70	-0.76	-0.87	-0.97	-1.11	-1.18	-1.24	-1.28	-1.31	-1.35
38	-0.51	-0.59	-0.65	-0.77	-0.88	-1.02	-1.10	-1.16	-1.20	-1.23	-1.26
Edge of Gob>	-0.44	-0.52	-0.58	-0.71	-0.82	-0.97	-1.05	-1.12	-1.16	-1.19	-1.24
40	-0.39	-0.46	-0.55	-0.69	-0.81	-0.97	-1.06	-1.13	-1.18	-1.21	-1.26
41	-0.36	-0.45	-0.54	-0.70	-0.84	-1.02	-1.12	-1.19	-1.24	-1.27	-1.32
Edge of Gob>	-0.34	-0.45	-0.55	-0.74	-0.91	-1.12	-1.23	-1.31	-1.36	-1.39	-1.45
43	-0.32	-0.46	-0.57	-0.82	-1.04	-1.28	-1.41	-1.49	-1.54	-1.57	-1.62
44	-0.30	-0.46	-0.60	-0.93	-1.20	-1.46	-1.62	-1.71	-1.76	-1.79	-1.84
45	-0.31	-0.55	-0.68	-1.11	-1.34	-1.76	-1.92	-2.00	-2.05	-2.08	-2.13
46	-0.35	-0.65	-0.84	-1.39	-1.81	-2.17	-2.33	-2.41	-2.45	-2.49	-2.53
47	-0.39	-0.75	-0.98	-1.65	-2.15	-2.52	-2.68	-2.75	-2.81	-2.84	-2.89
48	-0.41	-0.83	-1.10	-1.65	-2.42	-2.80	-2.95	-3.04	-3.09	-3.11	-3.15
49	-0.43	-0.88	-1.16	-1.98	-2.57	-2.97	-3.13	-3.21	-3.25	-3.28	-3.32
50	-0.44	-0.90	-1.20	-2.05	-2.66	-3.05	-3.22	-3.29	-3.34	-3.37	-3.41
Near Panel Center>	-0.47	-0.95	-1.25	-2.15	-2.75	-3.13	-3.30	-3.37	-3.42	-3.45	-3.49
52	-0.45	-0.93	-1.23	-2.17	-2.76	-3.15	-3.31	-3.38	-3.43	-3.46	-3.50
53	-0.44	-0.91	-1.21	-2.15	-2.75	-3.14	-3.30	-3.37	-3.42	-3.44	-3.48
54	-0.41	-0.84	-1.13	-2.05	-2.67	-3.07	-3.23	-3.30	-3.35	-3.37	-3.41
55	-0.37	-0.72	-0.98	-1.80	-2.39	-2.79	-2.98	-3.03	-3.07	-3.10	-3.13
56	-0.31	-0.57	-0.75	-1.40	-1.89	-2.20	-2.42	-2.49	-2.53	-2.55	-2.59
57	-0.27	-0.44	-0.57	-0.98	-1.35	-1.65	-1.79	-1.84	-1.88	-1.90	-1.93
58	-0.23	-0.33	-0.40	-0.61	-0.82	-1.01	-1.10	-1.15	-1.17	-1.19	-1.21
59	-0.19	-0.24	-0.28	-0.36	-0.44	-0.53	-0.56	-0.59	-0.61	-0.61	-0.62
60	-0.16	-0.20	-0.21	-0.25	-0.28	-0.32	-0.34	-0.32	-0.36	-0.36	-0.37
Edge of Gob>	-0.14	-0.15	-0.16	-0.19	-0.20	-0.22	-0.23	-0.24	-0.25	-0.24	-0.25
62	-0.12	-0.14	-0.14	-0.16	-0.16	-0.18	-0.18	-0.19	-0.19	-0.19	-0.19
63	-0.12	-0.10	-0.12	-0.14	-0.14	-0.16	-0.16	-0.17	-0.17	-0.16	-0.17
Edge of Gob>	-0.10	-0.10	-0.12	-0.12	-0.12	-0.13	-0.13	-0.13	-0.13	-0.13	-0.13
65	-0.10	-0.11	-0.11	-0.11	-0.11	-0.12	-0.11	-0.12	-0.12	-0.11	-0.12
66	-0.10	-0.10	-0.11	-0.11	-0.11	-0.12	-0.11	-0.12	-0.12	-0.11	-0.12
67	-0.09	-0.09	-0.10	-0.10	-0.09	-0.10	-0.10	-0.10	-0.10	-0.10	-0.10
68	-0.09	-0.10	-0.10	-0.10	-0.10	-0.11	-0.10	-0.10	-0.11	-0.10	-0.10
69	-0.10	-0.10	-0.10	-0.10	-0.10	-0.11	-0.10	-0.10	-0.10	-0.10	-0.10
70	-0.09	-0.09	-0.09	-0.09	-0.09	-0.10	-0.09	-0.09	-0.09	-0.09	-0.09
71	-0.02	-0.02	-0.03	-0.03	-0.02	-0.03	-0.02	-0.03	-0.03	-0.02	-0.03
72	-0.02	-0.02	-0.03	-0.02	-0.02	-0.03	-0.02	-0.03	-0.03	-0.02	-0.03
73	-0.02	-0.02	-0.02	-0.02	-0.02	-0.02	-0.02	-0.03	-0.03	-0.02	-0.02
74	-0.01	-0.02	-0.02	-0.02	-0.01	-0.02	-0.02	-0.02	-0.02	-0.01	-0.02
75	-0.01	-0.01	-0.01	-0.01	-0.01	-0.01	-0.01	-0.01	-0.02	-0.00	-0.01
76	-0.00	-0.00	-0.00	-0.00	-0.00	-0.00	0.00	-0.00	0.00	-0.00	0.00
77	-0.00	-0.00	-0.00	-0.00	-0.00	-0.00	0.00	-0.00	0.00	-0.01	0.00
78	-0.00	-0.00	-0.00	-0.00	-0.00	-0.00	-0.00	-0.00	-0.00	-0.00	-0.00
79	-0.00	-0.00	-0.00	-0.00	-0.00	-0.00	-0.00	-0.00	-0.00	-0.00	-0.00

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THE OHIO VALLEY COAL COMPANY
SUMMARY OF SUBSIDENCE SURVEYS ALONG STATE ROUTE 9
OVER LONGWALL PANELS DESIGNATED AS 10-WEST and 11-WEST

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PANEL DESIGNATION > 11-WEST (SECOND PANEL)	70	71	72	73	74	75	76	77	78	79
SURVEY NUMBER >	70	71	72	73	74	75	76	77	78	79
SURVEY DATE >	04/15/92	04/16/92	04/17/92	04/18/92	04/20/92	04/21/92	04/22/92	04/23/92	04/24/92	05/01/92
LONGWALL STATUS >			RECOVERING	RECOVERING	RECOVERING	RECOVERING	RECOVERING	RECOVERED	RECOVERED	RECOVERED
DAYS AFTER 1st SURVEY >	180	181	182	183	185	186	187	188	189	196
FACE PLUS @ SURVEY >	1871	1575	1545	1537	1536	1528	1525	1525	1525	1525
STATION NUMBER										
4	-	-	-	-	-	-	-	-	-	-
5	-	-	-	-	-	-	-	-	-	-
6	-	-	-	-	-	-	-	-	-	-
7	-	-	-	-	-	-	-	-	-	-
8	-	-	-	-	-	-	-	-	-	-
Edge of Gob >										
9	-	-	-	-	-	-	-	-	-	-
10	-	-	-	-	-	-	-	-	-	-
11	-	-	-	-	-	-	-	-	-	-
Edge of Gob >										
12	-	-	-	-	-	-	-	-	-	-
13	-	-	-	-	-	-	-	-	-	-
14	-	-	-	-	-	-	-	-	-	-
15	-	-	-	-	-	-	-	-	-	-
16	-	-	-	-	-	-	-	-	-	-
17	-	-	-	-	-	-	-	-	-	-
18	-	-	-	-	-	-	-	-	-	-
19	-	-	-	-	-	-	-	-	-	-
20	-	-	-	-	-	-	-	-	-	-
21	-	-	-	-	-	-	-	-	-	-
22	-	-	-	-	-	-	-	-	-	-
23	-	-	-	-	-	-	-	-	-	-
24	-	-	-	-	-	-	-	-	-	-
25	-	-	-	-	-	-	-	-	-	-
26	-	-	-	-	-	-	-	-	-	-
27	-	-	-	-	-	-	-	-	-	-
28	-3.78	-3.78	-3.80	-3.78	-3.78	-3.80	-3.78	-3.80	-3.78	-3.81
Near Panel Center >										
29	-3.75	-3.77	-3.78	-3.77	-3.78	-3.79	-3.77	-3.79	-3.77	-3.81
30	-3.73	-3.76	-3.77	-3.75	-3.75	-3.78	-3.78	-3.78	-3.75	-3.79
31	-3.70	-3.73	-3.75	-3.73	-3.73	-3.75	-3.74	-3.75	-3.73	-3.75
32	-3.68	-3.71	-3.72	-3.71	-3.71	-3.73	-3.72	-3.73	-3.71	-3.74
33	-3.52	-3.55	-3.56	-3.55	-3.55	-3.57	-3.56	-3.57	-3.56	-3.58
34	-3.25	-3.29	-3.30	-3.30	-3.30	-3.31	-3.31	-3.31	-3.30	-3.32
35	-2.58	-2.63	-2.64	-2.64	-2.64	-2.66	-2.66	-2.66	-2.65	-2.68
36	-2.02	-2.07	-2.08	-2.08	-2.08	-2.10	-2.10	-2.11	-2.09	-2.12
37	-1.55	-1.60	-1.61	-1.61	-1.62	-1.64	-1.64	-1.65	-1.63	-1.67
38	-1.35	-1.40	-1.41	-1.41	-1.42	-1.44	-1.44	-1.45	-1.43	-1.47
39	-1.26	-1.32	-1.33	-1.33	-1.34	-1.36	-1.36	-1.37	-1.36	-1.39
Edge of Gob >										
40	-1.24	-1.29	-1.30	-1.30	-1.31	-1.33	-1.33	-1.34	-1.32	-1.36
41	-1.26	-1.31	-1.32	-1.32	-1.33	-1.35	-1.35	-1.36	-1.34	-1.38
42	-1.33	-1.38	-1.39	-1.40	-1.40	-1.42	-1.42	-1.43	-1.42	-1.45
Edge of Gob >										
43	-1.45	-1.50	-1.52	-1.52	-1.53	-1.55	-1.55	-1.55	-1.54	-1.57
44	-1.63	-1.68	-1.68	-1.70	-1.71	-1.72	-1.73	-1.73	-1.72	-1.75
45	-1.65	-1.69	-1.91	-1.91	-1.92	-1.93	-1.93	-1.94	-1.93	-1.96
46	-2.14	-2.17	-2.20	-2.19	-2.21	-2.22	-2.22	-2.23	-2.21	-2.24
47	-2.54	-2.57	-2.60	-2.59	-2.60	-2.61	-2.61	-2.62	-2.61	-2.63
48	-2.89	-2.92	-2.95	-2.94	-2.95	-2.96	-2.96	-2.97	-2.95	-2.98
49	-3.16	-3.19	-3.22	-3.20	-3.21	-3.23	-3.22	-3.23	-3.22	-3.25
50	-3.33	-3.38	-3.39	-3.37	-3.38	-3.39	-3.39	-3.40	-3.39	-3.42
51	-3.41	-3.44	-3.47	-3.46	-3.47	-3.48	-3.47	-3.48	-3.47	-3.50
Near Panel Center >										
52	-3.49	-3.52	-3.55	-3.53	-3.55	-3.56	-3.55	-3.56	-3.55	-3.58
53	-3.50	-3.52	-3.55	-3.53	-3.55	-3.56	-3.55	-3.56	-3.55	-3.58
54	-3.48	-3.50	-3.53	-3.52	-3.53	-3.54	-3.54	-3.55	-3.54	-3.57
55	-3.41	-3.43	-3.46	-3.45	-3.46	-3.47	-3.46	-3.48	-3.46	-3.49
56	-3.14	-3.16	-3.19	-3.17	-3.19	-3.19	-3.19	-3.20	-3.19	-3.22
57	-2.59	-2.62	-2.64	-2.63	-2.64	-2.65	-2.64	-2.66	-2.65	-2.67
58	-1.93	-1.96	-1.98	-1.97	-1.98	-1.99	-1.98	-1.99	-1.98	-2.01
59	-1.20	-1.23	-1.25	-1.24	-1.25	-1.25	-1.25	-1.26	-1.25	-1.27
60	-0.82	-0.84	-0.86	-0.85	-0.86	-0.86	-0.86	-0.86	-0.85	-0.87
61	-0.38	-0.38	-0.40	-0.38	-0.40	-0.40	-0.40	-0.41	-0.39	-0.41
Edge of Gob >										
62	-0.26	-0.27	-0.28	-0.27	-0.28	-0.28	-0.28	-0.29	-0.26	-0.29
63	-0.20	-0.20	-0.22	-0.21	-0.21	-0.22	-0.21	-0.22	-0.19	-0.22
64	-0.17	-0.18	-0.19	-0.18	-0.19	-0.19	-0.19	-0.19	-0.17	-0.19
Edge of Gob >										
65	-0.13	-0.14	-0.15	-0.14	-0.15	-0.15	-0.15	-0.15	-0.13	-0.16
66	-0.12	-0.12	-0.13	-0.13	-0.13	-0.13	-0.13	-0.13	-0.12	-0.14
67	-0.12	-0.12	-0.13	-0.12	-0.13	-0.13	-0.13	-0.13	-0.11	-0.14
68	-0.10	-0.10	-0.12	-0.10	-0.11	-0.11	-0.11	-0.12	-0.09	-0.12
69	-0.10	-0.10	-0.12	-0.10	-0.11	-0.11	-0.11	-0.12	-0.09	-0.12
70	-0.10	-0.10	-0.11	-0.10	-0.11	-0.11	-0.11	-0.12	-0.09	-0.12
71	-0.09	-0.09	-0.10	-0.09	-0.10	-0.10	-0.09	-0.10	-0.08	-0.11
72	-0.02	-0.03	-0.04	-0.03	-0.04	-0.03	-0.03	-0.04	-0.02	-0.04
73	-0.02	-0.02	-0.04	-0.03	-0.03	-0.04	-0.03	-0.04	-0.02	-0.04
74	-0.02	-0.02	-0.03	-0.03	-0.04	-0.03	-0.03	-0.04	-0.01	-0.04
75	-0.01	-0.01	-0.03	-0.02	-0.03	-0.03	-0.02	-0.03	-0.01	-0.03
76	-0.01	-0.01	-0.03	-0.02	-0.02	-0.02	-0.02	-0.03	-0.01	-0.02
77	-0.00	-0.01	-0.01	-0.01	-0.01	-0.01	-0.01	-0.02	0.00	-0.01
78	0.00	-0.01	-0.01	-0.01	-0.01	-0.01	-0.00	-0.01	0.00	-0.01
79	-0.00	-0.00	-0.00	-0.00	-0.00	-0.00	0.01	-0.01	0.01	-0.00

TOVCC 21612

THE OHIO VALLEY COAL COMPANY
SUMMARY OF SUBSIDENCE SURVEYS ALONG STATE ROUTE 9
OVER LONGWALL PANELS DESIGNATED AS 10-WEST and 11-WEST

page 9

PANEL DESIGNATION > 11-WEST (SECOND PANEL)			
SURVEY NUMBER >	80	81	82
SURVEY DATE >	05/15/92	05/22/92	06/12/92
LONGWALL STATUS >	RECOVERED	RECOVERED	RECOVERED
DAYS AFTER 1st SURVEY >	210	217	238
FACE PLUS @ SURVEY >	1525	1525	1525

STATION NUMBER			
4	-	-	-1.02
5	-	-	-1.15
6	-	-	-1.26
7	-	-	-1.31
8	-	-	-1.33
Edge of Gob >			
9	-	-	-1.38
10	-	-	-1.42
11	-	-	-1.49
Edge of Gob >			
12	-	-	-1.57
13	-	-	-1.74
14	-	-	-1.94
15	-	-	-2.18
16	-	-	-2.43
17	-	-	-2.78
18	-	-	-3.00
19	-	-	-3.22
20	-	-	-3.36
21	-	-	-3.46
22	-	-	-3.51
23	-	-	-3.58
24	-	-	-3.64
25	-	-	-3.69
26	-	-	-3.78
27	-	-	-3.78
28	-3.80	-3.81	-3.83
Near Panel Center >			
29	-3.80	-3.80	-3.82
30	-3.79	-3.79	-3.84
31	-3.78	-3.78	-3.79
32	-3.74	-3.75	-3.77
33	-3.58	-3.59	-3.61
34	-3.33	-3.34	-3.36
35	-2.98	-2.70	-2.71
36	-2.13	-2.15	-2.17
37	-1.68	-1.69	-1.71
38	-1.47	-1.49	-1.51
39	-1.40	-1.42	-1.43
Edge of Gob >			
40	-1.37	-1.38	-1.40
41	-1.39	-1.40	-1.42
42	-1.46	-1.48	-1.50
Edge of Gob >			
43	-1.59	-1.60	-1.62
44	-1.77	-1.78	-1.80
45	-1.97	-1.99	-2.00
46	-2.26	-2.27	-2.28
47	-2.65	-2.66	-2.68
48	-2.99	-3.00	-3.01
49	-3.26	-3.27	-3.28
50	-3.43	-3.44	-3.44
51	-3.51	-3.52	-3.53
Near Panel Center >			
52	-3.59	-3.59	-3.60
53	-3.59	-3.60	-3.60
54	-3.57	-3.58	-3.59
55	-3.00	-3.51	-3.52
56	-3.22	-3.24	-3.24
57	-2.88	-2.89	-2.70
58	-2.02	-2.02	-2.04
59	-1.28	-1.29	-1.30
60	-0.68	-0.68	-0.70
61	-0.41	-0.41	-0.43
Edge of Gob >			
62	-0.29	-0.28	-0.29
63	-0.21	-0.22	-0.22
64	-0.19	-0.18	-0.20
Edge of Gob >			
65	-0.15	-0.15	-0.15
66	-0.13	-0.13	-0.14
67	-0.13	-0.12	-0.13
68	-0.11	-0.11	-0.12
69	-0.11	-0.11	-0.11
70	-0.11	-0.10	-0.11
71	-0.10	-0.09	-0.10
72	-0.03	-0.03	-0.04
73	-0.04	-0.03	-0.04
74	-0.03	-0.03	-0.04
75	-0.03	-0.02	-0.03
76	-0.03	-0.02	-0.03
77	-0.01	-0.01	-0.02
78	-0.00	-0.00	-0.01
79	-0.00	-0.00	-0.01

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ADDENDUM TO PAGE 29, PART 3, K(5)(a)
THE OHIO VALLEY COAL COMPANY
POWHATAN NO. 6 MINE
PERMIT D-0360

ANTICIPATED EFFECTS OF PLANNED SUBSIDENCE

Anticipated Effects to Vegetation - Dysart Woods

This application area is located approximately 2000 ft North and Northeast from the Dysart Woods Laboratory owned and operated by Ohio University. The property is a 455 acre farm, within which a total of 50 acres comprise two tracts of primeval oak forest according to the University. The 50 acre tracts are located on each side of Dysart Ault Road and traverse two ravines. This property has been the object of much controversy with regard to the mining at Ohio Valley.

It has been conjectured that the longwall mining in the vicinity of the Woods will impact the vegetation there. However, during the 7 ½ years since longwall mining began at the Powhatan No. 6 Mine, considerable data has been collected regarding hydrology and vegetation. Some of this data was collected by the National Ground Water Association. That preliminary study indicated that the hydrologic impacts of longwall mining extended no more than about 500 ft from the mining and that soil moisture immediately above the longwall mining is not impacted. Currently, that preliminary study is in the process of being updated based on our monitoring data. The Probable Hydrologic Consequences prepared by Moody and Associates for this application indicates that the groundwater is not impacted more than 500 ft from the mining. Our surface water monitoring data shows that surface water is not greatly impacted by longwall mining, and does not appear to be impacted over the long term.

This information indicates that an earlier finite element analysis of the region including both the Powhatan No. 6 Mine and Dysart Woods were in error. That analysis, conducted by Ohio University Professor Moid Ahmad, concluded that longwall mining located approximately 2 miles from the Woods would lower the water table beneath the woods and impact the trees. This prediction did not occur. During 1991, the longwall mining progressed within one mile of the Woods. No hydrologic impacts have been observed during recent monitoring in the area of the Woods to our knowledge. No vegetation has been impacted in the Woods to our knowledge.

The conclusion that we reach from this data is that no impacts to Dysart Woods are expected to occur as a result of longwall mining in this application area.

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ADDENDUM TO PAGE 30, PART 3, K(5)(b)
THE OHIO VALLEY COAL COMPANY
POWHATAN NO. 6 MINE
PERMIT D-0360

ANTICIPATED EFFECTS OF PLANNED SUBSIDENCE

Effect on Surface Lands

1. Tension cracking of the ground surface may occur. These cracks in the surface may vary in width from hairline, up to several inches wide.
2. OVCC believes that there will be no effect on the crop production as a result of mining. This fact is supported by a paper written by Dr. Frank L. Himes, Ph.D., entitled "Agronomic Evaluation of the Land in the Southern Ohio Coal Company Area", June, 1983. A copy is included in previous applications available to the Chief.
3. Slip-Prone Soils - A search of the Belmont County Soils Maps (specifically Map No. 36, 37, 44, and 45)* revealed several potential slide/slip areas within the following soil types:

<u>Soil Type</u>	<u>Slope</u>	<u>No. of Potential Slide/Slip Areas</u>
LpF	30-70	0
LoE	25-40	13
LoF	40-70	8
BsD	15-25	3
BsE	25-40	0
BsC	8-15	0
RcD	15-25	0

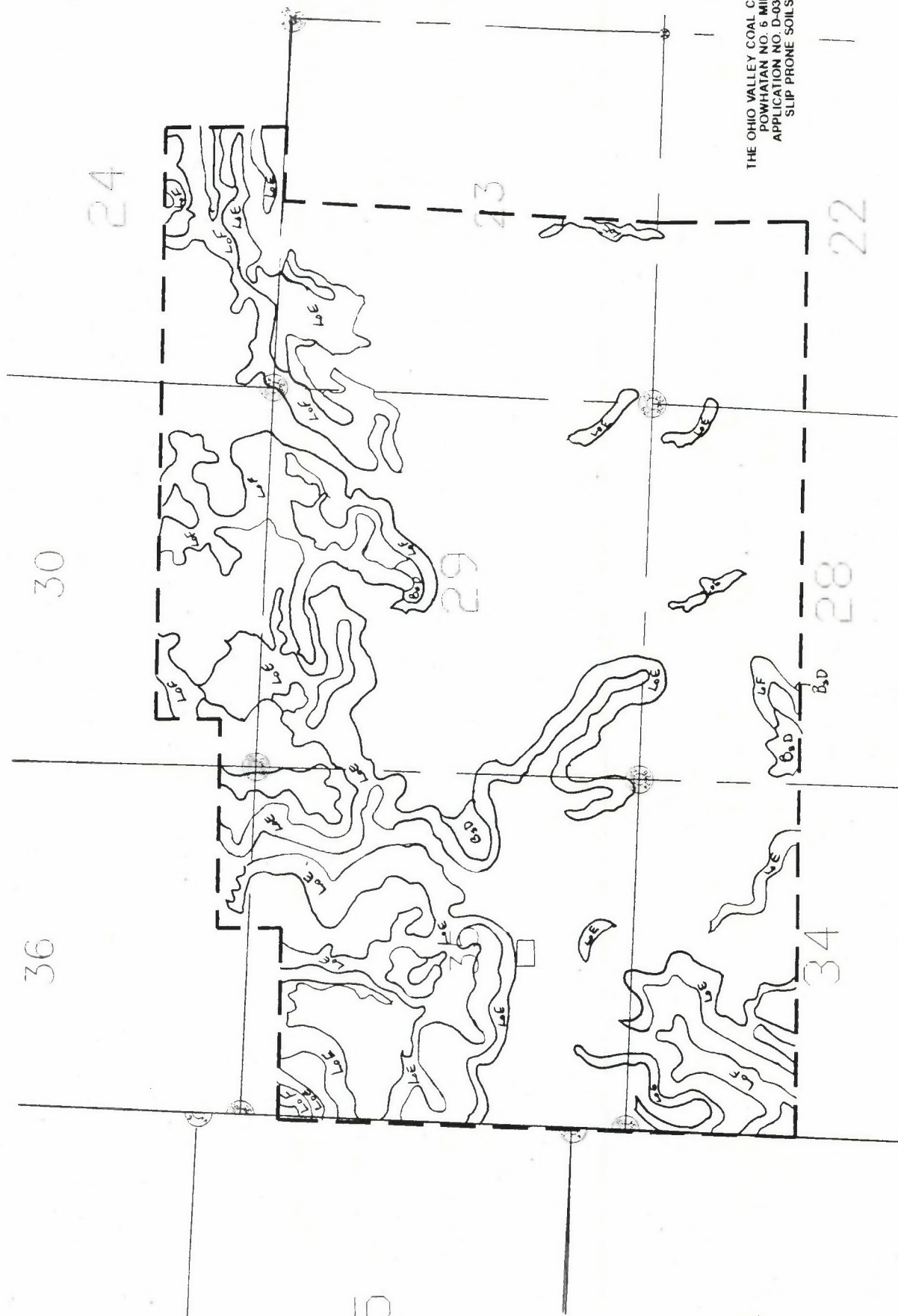
These areas have been mapped on the enclosed map showing the limits of the application area and slip prone soils. Please note - the Soil Survey of Belmont County does not describe subsidence as a source of potential slippage. Rather, it notes soil types that are slip prone for construction sites. Of the types of slip-prone soils identified, only LpF (Lowell-Westmoreland silt loam) has been known to be slip prone during longwall mining-induced subsidence in some areas. Other soil types have been undermined before without slippage occurring.

During the pre-subsidence survey, areas known to be slip prone during subsidence, as well as other similar sites that may have a significant impact to existing structures, may be inspected. Should conditions dictate, site specific measures, not limited to but including installation of cut-off trenches, drainage systems, and retaining walls, may be taken to minimize adverse effects.

*Soil Survey of Belmont County
ODNR, USDA March, 1974

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ADDENDUM TO PAGE 30, K(5)(b)
THE OHIO VALLEY COAL COMPANY
POWHATAN NO. 6 MINE
PERMIT D-0360

ANTICIPATED EFFECTS OF PLANNED SUBSIDENCE

Effect on Water Resources

The effect of subsidence on water resources varies greatly. The effect on wells, streams, streams, and other surface water each differ in the type and duration of effects. Each will be discussed below.

Wells

Depending upon the depth of the well, its location within the longwall subsidence area, and its surface elevation compared to the elevation of the coal, the effect of subsidence on wells may vary from complete dewatering to some dewatering to no dewatering. Generally, as the subsidence opens new places for the ground water to go, the elevation of the water decreases. The ground water is still present, but at a lower elevation. Aquicludes prevent further downward migration of water into the mine. In addition, the soft rock, particularly the clay stones in the strata, tend to swell, erode, and fill voids, causing some recovery in the elevation of the water. Wells may become completely dry permanently, may become completely dry temporarily, may hold less water, or as has been experienced in some instances, may not be affected. In some cases, the water level actually increases temporarily. This effect is caused by the strata being placed in compression and closing some of the joints, cracks, or bedding planes (secondary porosity features) that hold the water. However, as a general rule, the water level in wells decreases. As new surfaces are opened that water begins to flow over, the quality of the water also varies, usually temporarily. Normally, some increase in suspended solids, iron, manganese, and sulfates has been observed. These effects usually return to near normal after the water "washes" out the new chemicals.

Springs

Springs, given the fact that they are located on the surface, generally decrease in flow and usually dry completely with little or no recovery. The water stops flowing because it is no longer at the elevation of the surface installation. The water begins to flow horizontally, through different bedding planes, than before subsidence, and can and has been developed, successfully, as a spring at a lower elevation. Water quality varies as with wells. However, because of the increased porosity of the strata, springs developed over longwall panels, generally have higher flows.

Streams

Generally, streams are temporarily affected by subsidence, decreasing in flow as cracks open in the stream bed. However, because the streams contain a high concentration of sediment during rains, the cracks fill quickly and the effect is short lived. The water re-establishes itself within several months.

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Streams in this area begin as undeveloped or developed springs near the head of hollows and are fed throughout its length by springs and surface runoff. Streams that are fed by springs near the head of hollows continue to receive this groundwater, but at a lower elevation. Since rainfall is unaffected by subsidence, runoff continues to supply the water for streams.

Other Surface Water Features

Ponds primarily are the other surface water feature in this area. Our experience at the Powhatan No. 6 Mine has been that ponds are not substantially affected by subsidence in this area. Several ponds have been undermined with no visible effects. Cisterns, catch basins, etc. have been unaffected to date.

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ADDENDUM TO PAGE 30, PAGE 3, K(5)(c)
PAGE TWO

In most cases, surface cracks are expected to open and close relatively rapidly, however, some surface cracks may take weeks to close. For this reason, most cracks will not be repaired until OVCC determines that the cracks are not going to close themselves. If the surface cracks are in an area that is commonly traveled by man or livestock, the cracks will be repaired immediately. Surface cracking that is found in areas not commonly traveled, may be marked by brightly colored tape. This tape alerts anyone in the area of the depression or opening. If the cracks do not close within the period of time OVCC determines is adequate, a contractor will repair the cracks.

Monitoring of these areas will continue for up to six months after mining, and if the cracks reopen, they will once again be repaired. Monitoring of panel areas before mining consists of visual inspection or aerial photo review. OVCC's subsidence control program will adequately assure that the value and reasonably foreseeable use of the surface land is maintained.

3. Prior to the introduction of farm equipment into fields that have been undermined, OVCC will inspect the field for cracks or slips if requested by the landowner. Repairs needed (to maintain access into the fields) will be made at appropriate times. Crop lands damaged by subsidence will be repaired at appropriate times to permit harvest or cultivation without damage to personnel or equipment. Note: "appropriate times" indicates that the repairs will be made 1) at a time when access is needed and 2) when damage to adjacent plants will be minimized.

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ADDENDUM TO PAGE 30, PART 3, K(5)(d)
THE OHIO VALLEY COAL COMPANY
POWHATAN NO. 6 MINE
PERMIT D-0360

ANTICIPATED EFFECTS - SURFACE STRUCTURES

Structures situated over a panel or within the angle of draw may be damaged due to subsidence. When the longwall passes directly under a structure, the structure experiences first moderate tensile stress, then moderate compressive stress. As the structure subsides, the end that was undermined first subsides first, causing some tilting away from the advancing face. As the surface over the panel subsides, it takes on the shape of a trough, with the edges remaining in tension and the center in compression. Because the Powhatan No. 6 face moves quickly, damage to structure from this type of movement is minimized.

The damage that may be expected may involve cracking of plaster, cracking of concrete block or brick, cracking of dirt and cement floors, cracking along mortar joints, and separation of existing cracks. Cracks may close partially or completely after subsidence is complete. Additions to houses may separate away from the original structure. Cracks that occur during separation may close partially or completely after subsidence is complete.

Ponds may become partially dry temporarily as a result of subsidence-induced surface cracks. However, cracks in ponds have not caused de-watering to date at the Powhatan No. 6 Mine.

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ADDENDUM TO PAGE 30, PART 3, K(5)(d)
THE OHIO VALLEY COAL COMPANY
POWHATAN NO. 6 MINE
PERMIT D-0360

ANTICIPATED EFFECTS - UTILITY INSTALLATIONS

With respect only to utility installations passing over, under, or through a "permit area," Ohio Administrative Code 1501:13-11-02(B) requires that coal mining operations be conducted in a manner which minimizes damage, destruction, or disruption of services provided by such utility installations, unless otherwise approved by the Chief and installation owner. (See e. g., The East Ohio Gas Company v. Division of Reclamation, Case No. RBR-5-91-072 (March 19, 1992)). However, this application area does not include any "permit area." Gas pipelines which traverse the application area will be subject to tensile and compressive strains and, according to one pipeline expert, the pipeline coating (if any) could be damaged. Conceivably, the lines could break if left unprotected. If the lines remain buried during subsidence, the friction between the soil and the pipe may not allow the pipe to move freely as the subsidence trough develops. Some areas of the pipe will be placed in tension, others in compression. Protection of these lines is addressed in Section K(5)(e) of this Addendum. Other utility lines (water, electric, etc.), are generally unaffected by subsidence

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ANTICIPATED EFFECTS OF PLANNED SUBSIDENCE

Damage Repairs - Surface Lands

If subsidence due to mining operations causes slippage which reduces the value or reasonably foreseeable use of the surface land, OVCC will restore the land to a condition capable of supporting uses it was capable of supporting before subsidence. If slips are triggered by mining activities, these areas would be stabilized in accordance with accepted site specific procedures for such work if technologically and economically feasible. If not feasible, OVCC will arrange alternative mitigatory measures.

1. Notwithstanding its mining rights and without waiving nor releasing any of its rights, OVCC will make repairs of damage caused to surface lands by OVCC's mining operations if the damage reduces the foreseeable use or value of the surface lands. If such damage occurs, OVCC will submit to the Chief within thirty days after the damage occurs:
 - a. Site specific plans for the repair or mitigation of the damage, including a time schedule for performance of the remedial action.
 - b. A request for more time to prepare such plans; or
 - c. Written notification that OVCC believes that repair or restoration measures are not technologically feasible. If repair or restoration measures are not desired by the owner or if repair or restoration measures are not technologically feasible, other mitigatory measures will be described.
2. Damage to surface land will be repaired by local contractors. As surface damage occurs, the landowner will be notified and permission to repair the damage will be requested. Surface cracks will usually be repaired by the following method: After the length of the subsidence crack has been determined, a trench will be made in the crack. During the excavation topsoil will be segregated from subsoil and rock. Upon completion of the excavation, the material will be compacted using the track of the bulldozer or the wheel of the backhoe. Once the soil material has been replaced, the area will be seeded in a hayfield, pasturefield, or a yard.

OVCC will employ a program to monitor surface cracking and settling resulting from subsidence. Areas being mined will be inspected at various intervals, ranging from daily to weekly. These areas will be visually inspected for any subsidence related problems. If a problem is found, the landowner will be notified immediately.

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ADDENDUM TO PAGE 30, K(5)(d)
THE OHIO VALLEY COAL COMPANY
POWHATAN NO. 6 MINE
PERMIT D-0360

ANTICIPATED EFFECTS OF PLANNED SUBSIDENCE
SUBSTATIONS

A substation owned by the South Central Power Company (formerly Belmont Electric Company) will be subsided by the longwall. Anticipated effects include some minor tilting of the structures (transformers and steel frame work), and minor cracking of the slabs on which the transformers rest.. In 1992, a substation that supplied power to one of our bleeder fans was subsided without incident. This fan substation was critical to our operation, and interruption of service to this facility would have idled the mine. It did not.

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Revised per ~~me~~ Bartz 6-19-98
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ADDENDUM TO PAGE ~~30 AND 33~~, K(5)(e)
THE OHIO VALLEY COAL COMPANY
POWHATAN NO. 6 MINE
PERMIT D-0360

PLAN TO MONITOR WETLANDS AND MATURE FOREST, SIMPSON PROPERTY

A plan to monitor a mature forest on the Simpson property will be developed and implemented no less than 6 months prior to undermining the mature forest on this property. A plan to monitor a wetland on the Simpson property will be developed and implemented no less than one year prior to undermining this area of the Simpson property. These plans will be implemented as planned provided the landowner cooperates with this effort. Reporting of the monitoring will accompany the quarterly monitoring report for the wetland monitoring and the annual report for the mature forest monitoring.

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ADDENDUM TO PAGE 30, PART 3, K(5)(f)
THE OHIO VALLEY COAL COMPANY
POWHATAN NO. 6 MINE
PERMIT D-0360

NOTICE OF MINING,
PRE-SUBSIDENCE SURVEY, MONITORING OF STRUCTURES

Notice of Mining

OVCC will mail written notice to owners and occupants of surface property or structures of OVCC intent to mine under such property or structures at least six months prior to any mining by OVCC under their property.

Pre-Subsidence Survey

A pre-subsidence survey of all structures to be undermined will be conducted by OVCC personnel or by someone contracted to do this work and will be used to determine the condition of the structures and facilities prior to the mining unless a private agreement exists between OVCC and the landowner. This survey may include, but not be limited to: still and video photography, land surveying, making various measurements, interviewing landowners, tenants, or other individuals, and making various drawings. Refusal of the landowner to allow a pre-subsidence survey will release OVCC from the requirement to conduct the survey and repair damage. This survey will be performed in accordance with Underground PPD 90-3.

Monitoring of Structures

After OVCC has completed its pre-subsidence survey, OVCC will notify the Division of Mines and Reclamation if a private agreement (pursuant to OAC 1501:13-12-03(E)) between OVCC and the landowner exists. If no agreement exists, the Division of Mines and Reclamation, after discussions with OVCC, will decide the need for any monitoring of the structure(s). If monitoring is required, OVCC will submit a plan for the monitoring. If, prior to subsidence, a private agreement is reached, OVCC shall be released from any and all monitoring requirements.

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ADDENDUM TO PAGE 30, PART 3, K(5)(g)
THE OHIO VALLEY COAL COMPANY
POWHATAN NO. 6 MINE
PERMIT D-0360

REPAIRS TO STRUCTURES

After mining, structures will be repaired or replaced as required by law or the owner will be compensated for the diminution in value to the extent required by law. A private agreement may be used to satisfy the requirements of OAC 1501:13-12-03. If repaired, structures will be returned to their pre-mining condition.

Repair of and compensation for damage under the terms and conditions of OAC 1501:13-12-03(F) and (H) can be determined only after review and analysis of the damage in each particular situation. OVCC will comply with all legal requirements if subsidence damage occurs.

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ADDENDUM TO PAGE 30, PART 3, K(5)(h)
THE OHIO VALLEY COAL COMPANY
POWHATAN NO. 6 MINE
PERMIT D-0360

Monitoring of Structures

After OVCC has completed its pre-subsidence survey, OVCC will notify the Division of Mines and Reclamation if a private agreement (pursuant to OAC 1501:13-12-03(E)) between OVCC and the landowner exists. If no agreement exists, the Division of Mines and Reclamation, after discussions with OVCC, will decide the need for any monitoring of the structure(s). If monitoring is required, OVCC will submit a plan for the monitoring. If, prior to subsidence, a private agreement is reached, OVCC shall be released from any and all monitoring requirements.

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